Vol. 930 Number 4

OFFICIAL GAZETTE

of the

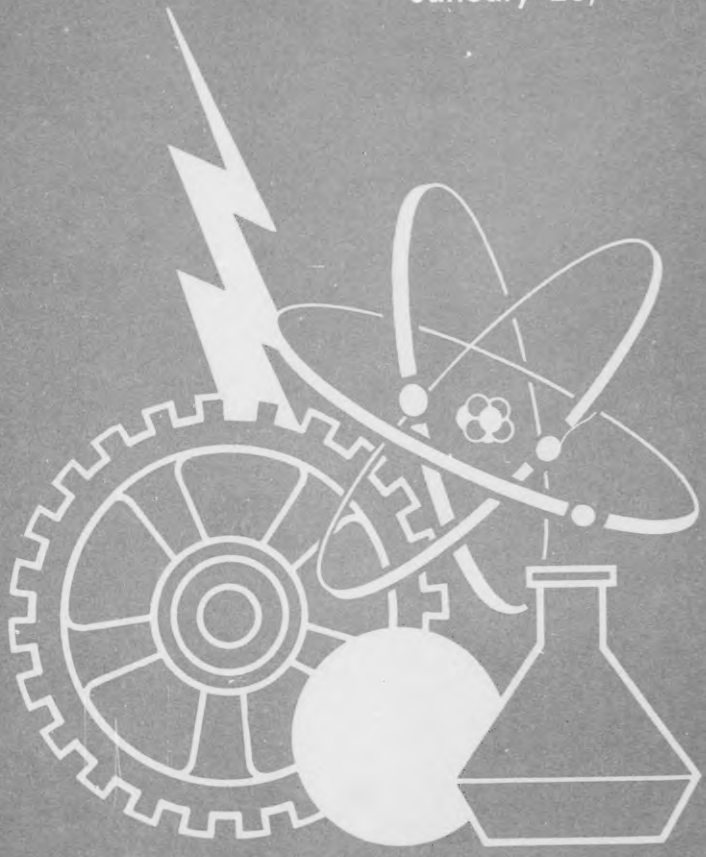
UNITED STATES PATENT OFFICE

AMOCO OIL CO.
FEB 4 1975
RESEARCH

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

January 28, 1975



U. S. DEPARTMENT OF COMMERCE

Patent Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

January 28, 1975 Volume 930 Number 4

CONTENTS

	Page
Patent and Trademark Notices	
Furnishing Assignment Data at Time of Payment of Base Issue Fee	1454
Procedure Under Trial Voluntary Protest Program	1454
Examination of Patent Applications Having an Issue of Fraud	1455
Patent Suits	1455
Patent Notices	
Certificates of Correction for the Week of January 28, 1975	1457
Dedication	1457
Disclaimers	1457
National Technical Service	1457
Condition of Patent Applications	1460
Patent Applications Published Under Trial Voluntary Protest Program	
General and Mechanical	1461
Chemical	1562
Electrical	1663
Reissue Patents Granted (28,317)	1725
Plant Patents Granted (3,676)	1729
Patents Granted	
General and Mechanical (3,862,451)	1731
Chemical (3,862,822)	1853
Electrical (3,863,021)	1902
Design Patents Granted (234,168)	1989
Index of Applicants and Assignees of Published Applications	PI 1
Classification of Published Patent Applications	PI 23
Index of Patentees	PI 27
Indices of Reissues, Plants and Designs	PI 51
Classification of	
Patents (Including Reissues)	PI 53
Designs and Plants	PI 55
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 56
Designs and Plants	PI 57

AMOCO OIL CO.
RESEARCH LIB.

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $342.20 per annum, foreign mailing $85.55 additional; single copies $6.60 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $88.40 per annum, foreign mailing $22.10 additional; single copies $1.70 each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS, price 60 cents each.

CIRCULARS OF GENERAL INFORMATION concerning TRADEMARKS, price 50 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

PATENT OFFICE NOTICES

REMINDER

Furnishing Assignment Data at Time of Payment of Base Issue Fee

Practitioners are once again reminded of Rule 334, revised November 1969, which requires that . . . "At the time of payment of the issue fee, a statement must be furnished indicating whether or not an assignment has been filed with the Patent Office. In the event an assignment has been filed, such statement must include the name of the assignee and indicate whether or not an acknowledgment of a recorded assignment has been received from the Patent Office."

The Issue Fee Transmittal Form POL 85*b*, revised December 1969 and May 1973, provides space (Item 2) for Assignment Data which should be completed to comply with the Rule. Unless an assignee's name and address are identified in Item 2 of the Issue Fee Transmittal Form POL 85*b*, the patent will issue to the applicant. ***Assignment Data printed on the patent will be based solely on information so supplied.***

A request for correction of error arising from incomplete or erroneous information furnished in Item 2 of POL 85*b* will not be granted as a matter of course and will be subject to adherence to all the requirements of Rule 323.

The recording of instruments in the Assignment Division is not affected by this Notice.

WILLIAM I. MERKIN,
Dec. 19, 1974. *Assistant Commissioner for Administration.*

Procedures Under Trial Voluntary Protest Program

The January 28, 1975 issue of the OFFICIAL GAZETTE includes publication of information identifying the 667 patent applications in which confidentiality has been waived under the Trial Voluntary Protest Program announced by the Notice of May 7, 1974, published at 923 O.G. 2 on June 4, 1974. This notice is somewhat more detailed than the earlier notice as to the procedures to be followed during the actual protest period and the consideration of protests.

Official Gazette

The patent applications which are subject to protest until April 28, 1975 are found in the January 28, 1975 issue under the title "Patent Applications Published Under Trial Voluntary Protest Program" arranged in the same three categories (General and Mechanical, Chemical, and Electrical) as used for patents. In each category, the applications are arranged in numerical class and subclass order. This OFFICIAL GAZETTE also includes two guides to assist location of a particular application. They are, an "Index of Applicants and Assignees of Published Applications" and a concordance between the published applications and the classification by class and subclass, entitled "Classification of Patent Applications."

Printed Copies of Applications

The public may order printed copies of the published applications at the price set by statute for patent copies by using the document number which is the Serial Number of the application with a letter "B" prefix (i.e., B 468,198). Each applicant who has permitted his application to be published under the Trial Voluntary Protest Program will be sent one copy of his application in printed form.

Inspection of Files

The Patent Office files of the published applications will be available for inspection by the public upon written request between January 28, 1975 and April 28, 1975 in the Examining Group Art Unit identified in the OFFICIAL GAZETTE and on the printed application copy. Applications referred to in the published applications will also be available to the public or written request. Written requests may simply state, "The undersigned desires to inspect the file of published application B ------ in Group ------ on -------- at -------" Such (date) (time) requests may be filed by mail or be presented to the receptionist in the respective Examining Group. In the event of concurrent requests for access to the same application, a time limit of two hours may be imposed. Such written requests for inspection will not be made of record in the applications.

Requests for copies of papers in the published application files should be filed in the appropriate Examining Group. The price for copies made by the Patent Office is thirty cents per page [37 C.F.R. 1.21(b)].

Filing of Protests

Protests relating to the patentability of any of the published applications must be filed in writing in the Patent Office no later than April 28, 1975. No extension of the time will be granted. Each protest must be filed in duplicate (one copy will be forwarded to the applicant and the other copy will be placed in the application file) and include the grounds which the protester believes have a bearing on the patentability of any claim contained in the published application. If the protest involves prior art not of record in the application, two copies of the alleged prior art, together with an explanation of the relevance of such prior art to the allowed claims, should be included. The protester may also comment on the prior art of record in the application and the manner in which it was applied.

In those published applications where prima facie evidence of prior public use or sale of the claimed invention is presented in accordance with 37 C.F.R. 1.292, public use proceedings will give the protester an opportunity to present evidence.

Should claims be copied by another applicant from a published application for interference purposes, the copier must also file a notice of such copying in the published application so that it will not be patented before conclusion of any interference proceedings.

Protester

A protester may elect to either (1) remain anonymous and have no further participation in the protest proceedings or (2) be recognized in the application file and become involved in any future prosecution of the application. In either instance the protester must initially identify himself and give his address, but if he desires to remain anonymous he may merely identify himself on a cover letter and request that the cover letter not be made of record. In such instances the cover letter will be kept in confidence by the Patent Office and destroyed upon completion of the prosecution. If a protester desires to withdraw from the protest proceedings, he may do so at any time.

Acknowledgement of Protest

The Examining Group will receive, retain and acknowledge receipt of all protests. After April 28, 1975, all protests will be made of record in the application file.

Consideration of Protest

A published application in which a protest has been filed will be reviewed to decide whether the evidence submitted by the protester is sufficient to warrant reopening of the prosecution in the application.

If a decision is made against reopening prosecution, the decision will be communicated in writing to the applicant and those protesters who elected to participate in prosecution. A copy of all protests filed in the application will be mailed to the applicant. The applicant may, but need not, file a paper presenting his views concerning the protests even though prosecution is not reopened.

If it is decided that the submitted evidence constitutes a prima facie showing of non-patentability of any allowed claim, prosecution of the application will be reopened and the application will be re-examined. The applicant will be informed of the decision to reopen prosecution by means of an Office Action signed by the primary examiner and approved by the Group Director. The Office Action will include a rejection of any claim believed unpatentable. A copy of all protests filed will also be mailed to the applicant with the Office Action. The Office Action will identify those protesters who elected to participate in prosecution and who submitted arguments on which the rejection in the Office Action is based. All such protesters identified in the Office Action will also receive a copy of that and any subsequent Office Actions from the Patent Office.

Other protesters who elected to participate in prosecution will be notified that prosecution has been reopened, but based on evidence and for reasons other than those submitted by them and that, consequently, no further correspondence will be directed to them.

Response by Applicant

The applicant may respond to the Office Action which reopened prosecution by argument and amendment. In order to permit protesters, who submitted evidence upon which a rejection is based, to participate in later prosecution, applicants will be required to serve by mail a copy of any response including appeal briefs on each protester identified in the Office Action. An indication of such service will be required in the reply to an Office Action in order for it to be considered a complete response.

The applicant need only reply to the rejections and objections made in the Office Action. There need be no specific response to any other points raised by the protesters.

Protester's Comments on Applicant's Response

Each protester who has been served will be allowed one month from the Patent Office date of receipt of applicant's response or brief, to file comments relating thereto. No extension of the one month period will be granted. All communications from protesters must be in writing. Examiner interviews with protesters are not permitted.

Any appeals to the Board of Appeals in protested applications will be taken up special.

Conclusion of Prosecution

If after further prosecution, the application is found to be allowable, all protesters still participating at that time will be notified thereof and the application will be forwarded to the Patent Issue Division. A decision of the primary examiner to allow an application will not be subject to petition by any protester.

Patenting

All patents resulting from applications published under the Trial Voluntary Protest Program will be printed in complete format. All such patents will include a notation that the disclosure has been previously published under the Trial Voluntary Protest Program.

C. MARSHALL DANN,
Jan. 6. 1975. *Commissioner of Patents and Trademarks.*

Examination of Patent Applications Having an Issue of Fraud

This notice deals with the general procedures established within the Patent Office for the handling, during ex parte examination, of applications in which, or in relation to which, some facts appear or representations are made raising an issue of fraud.

Such applications should be forwarded by the examiner to the Office of the Assistant Commissioner for Patents as soon as the facts or representations are discovered. The application will then be reviewed and a determination made as to whether immediate action on the issue of fraud is necessary or whether the consideration of such an issue should be delayed until after the normal ex parte examination by the examiner (if such examination has not previously taken place).

Where compelling reasons dictate immediate action, the application will not be returned to the examining group for normal ex parte examination until such action is complete. Otherwise, the application will be returned to the examining group. The examiner will complete the examination as to all matters except that any issues relating to possible fraud will not be considered or commented upon. When this examination is completed the application will be returned to the Office of the Assistant Commissioner for Patents. An investigation will then be undertaken to resolve the issues relating to the possible fraud. Such an investigation may include a requirement for additional information from applicant, or from the examiner, should it be necessary for the proper conduct of the investigation.

If the investigation reveals a prima facie case of fraud an Order to Show Cause why the application should not be stricken under Rule 56 of the Rules of Practice [37 CFR 1.56] will be issued.

If a prima facie case of fraud does not exist, or is adequately rebutted, a decision will be entered in the application file stating that the Patent Office has found no evidence necessitating striking the application. The application will then be returned to the examining group or other appropriate Patent Office section for further action.

WILLIAM FELDMAN,
Jan. 2, 1975. *Acting Assistant Commissioner for Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,708,376, C. H. Booth, CUTTING AND ABRADING TOOLS, **filed** Nov. 6, 1970, D.C., S.D.N.Y., Doc. 70–C–4873, *The Stanley Works* v. *Wim Distributors.* Consent judgment, ordered that defendant is enjoined as indicated. Judgment entered Jan. 15, 1971.

2,742,327, T. Marks, FULLY AUTOMATIC MACHINE FOR MAKING BRUSHES, **filed** Jan. 12, 1971, D.C., S.D.N.Y., Doc. 71–C–152, *American Technical Industries, Inc.* v. *Poloron Products Inc.* Filed stipulation and order dismissing action entered Sept. 22, 1971.

2,772,496, Meyrick and Ellsworth, ILLUMINATED SIGN STRUCTURE, **filed** May 16, 1972, D.C., S.D.N.Y., Doc. 72–C–2065, *SCM Corporation* v. *Burroughs Corporation.* Filed plaintiff's stipulation of dismissal with prejudice and without costs to either party, entered Nov. 2, 1972.

2,788,613, Gelfand and Noble, INERTIA-PROPELLED TOY VEHICLE AND LAUNCHING RUNWAY, **filed** Oct. 10, 1972, D.C., S.D.N.Y., Doc. 72–C–4484, *Ideal Toy Corporation* v. *Remco Industries, Inc.* Filed order dismissing action pursuant to Rule 41(a), May 24, 1972.

2,853,420, H. Lowey, ETHYL CELLULOSE COATINGS FOR SHAPED MEDICINAL PREPARATIONS; **2,953,497**, H. A. Press, THERAPEUTIC TABLETS, **filed** Oct. 10, 1965, D.C., S.D.N.Y., Doc. 65–C–2975, *Howard Press* v. *Forest Laboratories, Inc. et al.* Filed judgment that defendants have summary judgment against the plaintiff dismissing the complaint, Nov. 14, 1973.

2,919,042, J. V. Kieruliff, TRAVELLING SHIP-LOADING CRANE, **filed** Dec. 26, 1967, D.C., S.D.N.Y., Doc. 67–C–5030, *Wiley Manufacturing Company* v. *Jorgen V. Kierulff Associates, Inc.* Filed stipulation of dismissal under Rule 41(a), May 28, 1969.

2,953,497. (See 2,853,420.)

2,990,094, R. F. Reifers, MOLDED PULP EGG CARTON, **filed** May 26, 1969, D.C. Md. (Baltimore), Doc. 20809–W, *Diamond International Corporation* v. *Maryland Fresh Eggs Inc.* Judgment entered finding patent valid and infringed. Case still open as to damages, July 26, 1974. **Same, filed** July 8, 1974, D.C. Del. (Wilmington), Doc. C.A. 74–137, *Diamond International Corporation* v. *Dolco Packaging Corporation, The Dow Chemical Company and Olson Farms, Inc.*

3,008,263, J. Ellman, BUBBLE PRODUCING TOY, **filed** May 21, 1973, D.C., S.D.N.Y., Doc. 73–2267, *George Lerner and Julius Ellman* v. *Ohio Art Company.* Stipulation of dismissal June 4, 1974.

3,017,087, A. V. Bodeen, REGISTERING DEVICE, **filed** June 7, 1967, D.C., S.D.N.Y., Doc. 67–C–2210, *Ideal Toy Corp.* v. *Mattel Inc.* Filed stipulation and order that the plaintiff's complaint be dismissed without prejudice, Sept. 14, 1974.

3,017,187, J. W. Ryan, MULTIPLE SPEECH PHONOGRAPH, **filed** July 20, 1971, D.C., S.D.N.Y., Doc. 71–3231, *Mattel Inc.* v. *Ideal Toy Corp.* Filed order and judgment in favor of defendant, Feb. 23, 1973.

3,017,323, Gordon, Stephens, Noseworthy and Teare, THERAPEUTIC COMPOSITIONS, **filed** Feb. 11, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–353–RJK, *Pfizer Inc.* v. *International Rectifier Corp. and Rachelle Laboratories.*

3,018,272, Griffing and Remington, SULFONATE CONTAINING POLYESTERS DYEABLE WITH BASIC DYES, **filed** Nov. 12, 1970, D.C., S.D.N.Y., Doc. 70–C–4978, *E. I. du Pont de Nemours and Company* v. *Eastman Chemical Products, Inc.* Filed stipulation and order of dismissal on the terms and conditions indicated without prejudice, June 26, 1974.

3,096,767, Gresser, Grosof and Solon, PHOTO-CAUTERIZER WITH COHERENT LIGHT SOURCE, **filed** June 25, 1968, D.C., S.D.N.Y., Doc. 68–C–2601, *American Optical Corporation* v. *Control Data Corporation.* Filed stipulation and order that this action is hereby dismissed with prejudice pursuant to Rule 41(a), June 8, 1973.

3,113,277, Casper and McFarland, MULTI-SECTION ASYMMETRICAL COUPLER, **filed** Dec. 18, 1972, D.C., S.D.N.Y., Doc. 72–C–5320, *The Narda Microwave Corporation* v. *Struthers Electronics Corporation.* Filed stipulation and order dismissing action without prejudice, Apr. 25, 1973.

3,126,841, E. R. Nay, APPARATUS FOR MANUFACTURING SNOW CONES, **filed** May 16, 1974, D.C., C.D. Calif. (Los Angeles), Doc. 74–1353–HP, *Eugene R. Nay* v. *Frozen Desserts Company.*

3,209,647, W. J. Hall, SLIDE PROJECTOR USING A BOX OR CIRCULAR SLIDE MAGAZINE, **filed** June 17, 1968, D.C., N.D. Ill. (Chicago), Doc. 68c1121, *GAF Corporation* v. *Hanimex Corporation Limited and Hanimex, U.S.A. Inc.* All complaints dismissed without prejudice, counterclaims dismissed by stipulation and order, June 20, 1972.

3,243,914, D. B. Poynter, ELECTRICALLY OPERATED COIN BOX DEVICE, **filed** July 27, 1966, D.C., S.D.N.Y., Doc. 66–C–2326, *Poynter Products, Inc.* v. *Royal London Ltd.* Stipulation and order of discontinuance, Nov. 13, 1972.

3,384,564, Ornstein and Davis, ELECTROPHORETIC PROCESS FOR SIMULTANEOUSLY SEPARATING AND CONCENTRATING PARTICLES, **filed** Sept. 20, 1968, D.C., S.D.N.Y., Doc. 68–C–3784, *Buchler Instruments Inc.* v. *Mount Sinai Hospital Research Foundation, Inc.* Filed consent judgment, ordered that the accused patent infringing practices having been discontinued by modification of the instruction manuals and promotion literature, with agreement not to resume the accused practices, Feb. 7, 1973.

3,398,689, R. W. Allington, APPARATUS PROVIDING A CONSTANT-RATE TWO COMPONENT FLOW STREAM, **filed** July 23, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c2079, *Instrumentation Specialties Company* v. *Varian Associates.*

3,540,689, M. D. LaBate, SECTIONAL HOT TOP WITH CHANNEL SHAPED WIPING AND HOLDING DEVICE, **filed** July 5, 1974, D.C., W.D. Pa. (Pittsburgh), Doc. 74–659, *Michael D. LaBate* v. *Treesdale, Inc.*

3,550,532, T. Zimmerman, MOISTURE-PROOF COMBUSTIBLE CARTRIDGE CASE, **filed** Aug. 12, 1974, D.C.N.J. (Newark), Doc. 74–1227, *Theodore Zimmerman* v. *United States Government, Department of the Army.*

3,552,754, L. E. Sauer, REINFORCED FREE-WHEELING RESILIENT COVER FOR ROTARY DIE-CUTTING ANVIL, **filed** Aug. 9, 1974, D.C., S.D. Ind. (Indianapolis), Doc. IP 74–435–C, *Centenary Central, Inc.* v. *Corrugated Finishing Products, Inc.*

3,617,859, Dobkin and Widlar, ELECTRICAL REGULATOR INCLUDING A ZERO-TEMPERATURE COEFFICIENT VOLTAGE REFERENCE CIRCUIT, **filed** July 13, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–1596–F, *National Semiconductor Corporation* v. *Silicon General, Inc.* Filed judgment and order that defendant is enjoined from infringing plaintiff's patent. Defendant's counterclaim is dismissed with prejudice, entered Aug. 19, 1974.

3,696,995, W. Kasner, CALCULATOR; **3,706,875,** same, **filed** Aug. 15, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1912–AAH, *Bandwagon Inc.* v. *Diamond International Corporation and William Kasner.* Final judgment by consent, complaint dismissed with prejudice, Aug. 16, 1974.

3,706,875. (See 3,696,995.)

3,711,066, L. P. Niemiec, SNAP LOCK PLASTIC FENCING, **filed** Feb. 27, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c521, *Leo P. Niemiec, etc.* v. *Montgomery Ward and Company.* Defendant's motion for summary judgment granted and summary judgment entered in favor of defendants, July 11, 1974.

Certificates of Correction for the Week of Jan. 28, 1975

Re. 27,825	3,794,408	3,829,104	3,839,044
Re. 28,112	3,794,811	3,829,314	3,839,539
3,495,663	3,798,323	3,829,464	3,839,582
3,549,796	3,799,898	3,829,810	3,839,717
3,601,181	3,803,328	3,829,828	3,839,774
3,607,266	3,806,339	3,830,793	3,839,882
3,633,965	3,807,751	3,830,915	3,840,306
3,657,185	3,808,271	3,831,042	3,840,490
3,686,232	3,809,813	3,831,094	3,840,582
3,689,921	3,812,808	3,832,396	3,842,022
3,691,131	3,813,154	3,833,575	3,842,683
3,700,693	3,813,433	3,833,622	3,843,042
3,709,451	3,814,886	3,834,916	3,843,051
3,725,381	3,817,938	3,836,493	3,843,203
3,727,960	3,821,046	3,836,600	3,843,265
3,742,094	3,824,075	3,837,009	3,843,805
3,763,002	3,825,524	3,837,199	3,844,309
3,763,178	3,825,582	3,837,397	3,845,204
3,763,661	3,825,947	3,837,946	3,845,594
3,764,415	3,825,957	3,838,049	3,846,122
3,772,051	3,827,340	3,838,182	3,846,175
3,781,325	3,827,639	3,838,240	3,846,231
3,784,564	3,827,968	3,838,672	3,848,616
3,785,805	3,828,028		
3,791,715	3,828,094	3,838,854	3,850,828
3,793,407	3,828,920	3,838,966	3,851,876

Dedication

3,496,944.—*Concetta L. Cuozzi*, Yorktown Heights, N.Y. GARTER STRUCTURE FOR PANTY GIRDLE. Patent dated Feb. 24, 1970. Dedication filed Sept. 27, 1974, by the assignee, *Munsingwear, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers

Reissue No. 25,136.—*Chester F. Carlson*, Pittsford, N.Y. ELECTROSTATIC DEVELOPER COMPOSITION AND METHOD THEREFOR. Patent dated Mar. 13, 1962. Disclaimer filed June 7, 1974, by the assignee, *Xerox Corporation.*

Hereby disclaims the portion of the term of the patent subsequent to Feb. 5, 1974.

3,359,826.—*Wilhelm Hanslik*, Vienna, Austria. DRIVING GEARING FOR PLASTIC EXTRUDERS. Patent dated Dec. 26, 1967. Disclaimer filed July 19, 1974, by the assignee, *Cincinnati Milacron Inc.*

Hereby enters this disclaimer to claims 1 through 4 inclusive, of said patent.

3,475,738.—*Helmut P. Louis*, Burlington, Vt., and *Siegfried Methfessel*, Montrose, N.Y. MAGNETO-OPTICAL DATA STORAGE. Patent dated Oct. 28, 1969. Disclaimer filed Sept. 23, 1974, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to all claims of said patent.

3,576,163.—*James G. Lawson*, Norwalk, Conn. AUTOMATIC DOCUMENT HANDLING EJECTION APPARATUS. Patent dated Apr. 27, 1971. Disclaimer filed Oct. 12, 1973, by the assignee, *Pitney-Bowes, Inc.*

Hereby enters this disclaimer to claims 1–13 (inclusive) and 15–17 (inclusive) of said patent.

3,676,031.—*Frederick M. Stinton*, Woodbridge, Ontario, and *William M. Slater*, Toronto, Ontario, Canada. POST-TENSIONING SYSTEM. Patent dated July 11, 1972. Disclaimer filed Nov. 14, 1974, by the assignee, *Conenco International Limited.*

Hereby enters this disclaimer to claims 1, 2, 4, 5, 6, 7, 8 and 9 of said patent.

3,780,048.—*Robert J. Alaimo* and *Marvin M. Goldenberg*, Norwich, N.Y. 1-HYDROXY-2-(SUBSTITUTED ANILINO) QUINOLIZINIUM BROMIDES. Patent dated Dec. 18, 1973. Disclaimer filed Feb. 27, 1974, by the assignee, *Morton-Norwich Products, Inc.*

Hereby enters this disclaimer to all claims of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of patents are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161, at the prices cited. Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent Office. Claims and other technical data can usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent 3,783,285. Neutron-Flux Responsive Switch. Filed Sept. 6, 1972. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,783,300. Automatic Photomultiplier Tube Voltage Controller. Filed Sept. 18, 1972. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,783,680. Multipoint Vibration Monitoring System. Filed July 12, 1972. Patented Jan. 8, 1974. Not available NTIS.

Patent 3,784,909. Picosecond Beam Monitor. Filed Jan. 23, 1973. Patented Jan. 8, 1974. Not available NTIS.

Patent 3,786,858. Method of Extracting Heat from Dry Geothermal Reservoirs. Filed Mar. 27, 1972. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,789,310. High Emission Cold Cathode. Filed Sept. 14, 1972. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,792,231. Miniature Multistation Photometer Rotor Temperature Control. Filed Jan. 11, 1973. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,794,174. Porous Metal Insulator Sandwich Membrane. Filed Jan. 11, 1972. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,795,420. Lift Coupling. Filed Mar. 7, 1973. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,796,673. Method of Producing Multicomponent Metal-Metal Oxide Single Crystals. Filed June 30, 1972. Patented Mar. 12, 1974. Not available NTIS.

Patent 3,798,459. Compact Dynamic Multistation Photometer Utilizing Disposable Curvette Rotor. Filed Oct. 6, 1972. Patented Mar. 19, 1974. Not available NTIS.

Patent 3,798,962. Method for Predicting Movements of Structural Members Emplaced in the Earth. Filed Apr. 19, 1972. Patented Mar. 26, 1974. Not available NTIS.

U.S. DEPARTMENT OF AIR FORCE
AF/JACP,
Washington, D.C. 20314

Patent application 495,472. Split-Ring Marx Generator Grading. Filed Aug. 7, 1974. PC $3.25/MF $2.25.

Patent application 468,329. Apparatus for Providing an Aerodynamic Window. Filed May 9, 1974. PC $3.25/MF $2.25.

Patent application 468,608. Software Calibration of Analog Systems. Filed May 9, 1974. PC $3.25/MF $2.25.

Patent application 469,194. Method and Apparatus for Pattern Analysis. Filed May 13, 1974. PC $3.75/MF $2.25.

Patent application 471,930. Ramjet With Integrated Rocket Boost Motor. Filed May 21, 1974. PC $3.25/MF $2.25.

Patent application 474,560. Aryl Ether Compounds and Their Synthesis. Filed May 30, 1974. PC $3.25/MF $2.25.

Patent application 474,563. Continuity and Tone Test Set. Filed May 30, 1974. PC $3.25/MF $2.25.

Patent application 474,564. Plug for Drive Shaft With Internal Drive Spline. Filed May 30, 1974. PC $3.25/MF $2.25.

Patent application 476,178. Method and Apparatus for Measuring Linear Thermal Expansion of Polymeric Material. Filed June 4, 1974. PC $3.25/MF $2.25.

Patent application 483,735. Thermally Stable Perfluoroalkylene Ether Bibenzoxazole Polymers. Filed June 27, 1974. PC $3.25/MF $2.25.

Patent application 486,804. Spool for Wire Deployment. Filed July 9, 1974. PC $3.25/MF $2.25.

Patent application 492,075. Method of Fabricating Ion Implanted ZnSe P-N Junction Devices. Filed July 26, 1974. PC $3.25/MF $2.25.

Patent application 492,077. System Channel Distortion Weighting for Predetection Combiners. Filed July 26, 1974. PC $3.25/MF $2.25.

Patent application 492,093. A Triangular Interferometric Light-Source Tracker. Filed July 26, 1974. PC $3.25/MF $2.25.

Patent application 494,937. Method and Device for Evaluating Penetrants. Filed Aug. 5, 1974. PC $3.25/MF $2.25.

Patent application 495,452. Preparation of Polybenzimidazoles. Filed Aug. 7, 1974. PC $3.25/MF $2.25.

Patent application 495,471. Substituted Phenyl-Benzimidazo Compounds. Filed Aug. 7, 1974. PC $3.25/MF $2.25.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch, Hyattsville, Md. 20782

Patent 3,761,584. Phenethyl Propionate and Eugenol. A Potent Attractant for the Japanese Beetle (Popillia Japonica Newman). Filed Dec. 9, 1970. Patented Sept. 25, 1973. Not available NTIS.

ENVIRONMENTAL PROTECTION AGENCY

Room W513, 401 M Street SW., Washington, D.C. 20460

Patent 3,733,266. Waste Water Purification by Breakpoint Chlorination and Carbon Adsorption. Filed Sept. 7, 1971. Patented May 15, 1973. Not available NTIS.

Patent 3,806,436. Concentration of Electrolyte From Dilute Washings. Filed June 23, 1972. Patented Apr. 23, 1974. Not available NTIS.

Patent 3,814,658. Removal of Mercury From Mercury Cathode Sludge. Filed Apr. 27, 1973. Patented June 4, 1974. Not available NTIS.

Patent 3,823,693. Fluidized Bed Heat Exchanger. Filed Jan. 16, 1973. Patented July 16, 1974. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch, Bethesda, Md. 20014

Patent 3,835,140. Process for the Preparation of Dehydroberbinium Salts. Filed Jan. 30, 1973. Patented Sept. 10, 1974. Not available NTIS.

U.S. DEPARTMENT OF INTERIOR

Branch of Patents, Washington, D.C. 20240

Patent 3,637,823. Preparation of Caronic Acid From Delta-3-Carene. Filed Oct. 20, 1969. Patented Jan. 25, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, Washington, D.C. 20546

Patent 3,829,237. Variably Positioned Guide Vanes for Aerodynamic Choking. Patented Aug. 13, 1974. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents, Washington, D.C. 20545

Patent application 445,739. Improved Bearing Mounting for Telescoping Tubes. Filed Feb. 25, 1974. PC $3.25/MF $2.25.

Patent 3,777,348. High Current Cable Engagement Tool. Filed May 31, 1972. Patented Dec. 11, 1973. Not available NTIS.

Patent 3,795,597. Method of Producing an Ultra-Clean, Bright Surface on Titanium. Filed Mar. 15, 1973. Patented Mar. 5, 1974. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Bethesda, Md. 20014

Patent application 498,109. Test for Occult Blood. Filed Aug. 16, 1974. PC $3.25/MF $2.25.

Patent application 498,187. Production of N5-Methyltetrahydrohomofolic Acid and Related Reduced Derivatives of Homofolic Acid. Filed Aug. 16, 1974. PC $3.25/MF $2.25.

Patent application 498,281. Protein Coated Electrode. Filed Aug. 16, 1974. PC $3.25/MF $2.25.

Patent application 500,056. Composite Heart Valve Poppet. Filed Aug. 23, 1974. PC $3.25/MF $2.25.

Patent application 500,866. Rotor for Centrifugal Testing of Electrophoresis Gel. Filed Aug. 27, 1974. PC $3.25/MF $2.25.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, Washington, D.C. 20546

Patent 3,826,448. Deployable Flexible Ventral Fins for Use as an Emergency Spin Recovery Device in Aircraft. Patented July 30, 1974. Not available NTIS.

Patent 3,829,237. Variably Positioned Guide Vanes for Aerodynamic Choking. Patented Aug. 13, 1974. Not available NTIS.

U.S. DEPARTMENT OF THE ARMY

Chief, Patents Division, Office of Judge Advocate General, Pentagon, Washington, D.C. 20310

Patent application 278,831. Synthesis, Purification and Use of The Ascorbate Sulfates. Filed Aug. 8, 1972. PC $3.75/MF $2.25.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents, Washington, D.C. 20545

Patent 3,785,994. Gas Mixture for Forming Protective Coatings on Graphite. Filed Sept. 23, 1960. Patented Jan. 15, 1974. Not available NTIS.

Patent 3,793,204. Thermal Insulation. Filed July 28, 1972. Patented Feb. 19, 1974. Not available NTIS.

Patent 3,795,451. Rotor for Fast Analyzer of Rotary Cuvette Type. Filed Apr. 24, 1973. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,796,545. Device for Preparing Elemental Carbon Enriched in Carbon-13. Filed Feb. 23, 1972. Patented Mar. 12. 1974. Not available NTIS.

U.S. DEPARTMENT OF AIR FORCE

AF/JACP, Washington, D.C. 20314

Patent application 483,736. Gun Support Tube Assembly. Filed June 27, 1974. PC $3.25/MF $2.25.

Patent application 486,801. Cabinet Closure System. Filed July 9, 1974. PC $3.25/MF $2.25.

Patent application 486,802. Eddy Sonic Stethoscope. Filed July 9, 1974. PC $3.25/MF $2.25.

Patent application 486,803. Thermal Differential Compensator. Filed July 9, 1974. PC $3.25/MF $2.25.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch, General Services Division, Hyattsville, Md. 20782

Patent application 104,781. Arthropod Maturation Inhibitors. Filed Jan. 7, 1971. PC $3.25/MF $2.25.

Patent application 431,762. Method for Reducing Heating and Brightness Loss in Pulp Chips With Aqueous Solutions of Sodium N-Methyldithiocarbamate. Filed Jan. 8, 1974. PC $3.25/MF $2.25.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent application 482,104. Ceramic Coating for Silica Insulation. Filed June 24, 1974. PC $3.25/MF $2.25.

Patent application 482,953. Apparatus for Simulating Optical Transmission Links. Filed June 25, 1974. PC $3.25/MF $2.25.

Patent application 483,858. Method and Apparatus for Tensile Testing of Metal Foil. Filed June 27, 1974. PC $3.25/MF $2.25.

Patent application 487,852. Polyimides of Ether-linked Aryl Tetracarboxylic Dianhydrides. Filed July 11, 1974. PC $3.25/MF $2.25.

Patent application 489,009. Electrical Conductivity Cell and Method for Fabricating the Same. Filed July 16, 1974. PC $3.25/MF $2.25.

Patent application 491,413. Real Time Liquid Crystal Image Converter. Filed July 24, 1974. PC $3.25/MF $2.25.

Patent application 491,417. Auger Attachment Method for Insulation. Filed July 24, 1974. PC $3.25/MF $2.25.

Patent application 495,021. High Voltage, High Current Schottky Barrier Solar Cell. Filed Aug. 5, 1974. PC $3.25/MF $2.25.

Patent application 495,022. Computer Interface System. Filed Aug. 5, 1974. PC $3.75/MF $2.25.

Patent application 496,779. Single Wing Supersonic Aircraft. Filed Aug. 12, 1974. PC $4.25/MF $2.25.

Patent 3,824,707. Apparatus for Applying Simulator G-Forces to an Arm of an Aircraft Simulator Pilot. Patented July 23, 1974. Not available NTIS.

Patent 3,825,760. Flame Detector Operable in Presence of Proton Radiation. Patented July 23, 1974. Not available NTIS.

Patent 3,826,726. Production of Pure Metals. Patented July 30, 1974. Not available NTIS.

Patent 3,826,729. Sputtering Holes with Ion Beamlets. Patented July 30, 1974. Not available NTIS.

Patent 3,827,288. Digital Servo Control of Random Sound Test Excitation. Patented Aug. 6, 1974. Not available NTIS.

Patent 3,827,807. Star Scanner. Patented Aug. 6, 1974. Not available NTIS.

Patent 3,828,137. Digital Communication System. Patented Aug. 6, 1974. Not available NTIS.

Patent 3,828,138. Coherent Receiver Employing Nonlinear Coherence Detection for Carrier Tracking. Patented Aug. 6, 1974. Not available NTIS.

Patent 3,828,524. Centrifugal Lyophobic Separator. Patented Aug. 13, 1974. Not available NTIS.

Patent 3,829,237. Variably Positioned Guide Vanes for Aerodynamic Choking. Patented Aug. 13, 1974. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent 3,801,438. Toroidal Apparatus for Confining Plasma. Filed Apr. 3, 1970. Patented Apr. 2, 1974. Not available NTIS.

Patent 3,803,512. Hydrogen-Fluoride Chemical Laser Oscillator. Filed Sept. 29, 1972. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,804,533. Rotor for Fluorometric Measurements in Fast Analyzer of Rotary. Filed Nov. 29, 1972. Patented Apr. 16, 1974. Not available NTIS.

Patent 3,808,128. Drilling Mud Composition for Shielding Underground Nuclear Explosive Devices. Filed May 11, 1972. Patented Apr. 30, 1974. Not available NTIS.

Patent 3,815,761. Grip Accessory for Remote-Control Manipulator Tongs. Filed Mar. 2, 1973. Patented June 11, 1974. Not available NTIS.

U.S. DEPARTMENT OF AIR FORCE

AF/JACP,
Washington, D.C. 20314

Patent 3,814,575. Combustion Device. Filed Apr. 25, 1973. Patented June 4, 1974. Not available NTIS.

U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, 400 7th St. SW.,
Washington, D.C. 20590

Patent application 521,655. Pile Driver Hammer Lock. Filed Nov. 7, 1974. PC $3.25/MF $2.25.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health,
Bethesda, Md. 20014

Patent application 503,744. An Automated System for the Determination of Bacterial Antibiotic Susceptibilities. Filed Sept. 6, 1974. PC $3.25/MF $2.25.

Patent application 506,744. Dual Frequency Acoustic Gas Composition Analyzer. Filed Sept. 16, 1974. PC $3.25/MF $2.25.

Patent application 507,991. Liquid Crystal Gas Analyzer. Filed Sept. 20, 1974. PC $3.25/MF $2.25.

U.S. DEPARTMENT OF NAVY

Assistant Chief for Patents, Office of Naval Research,
Arlington, Va. 22217

Patent 3,730,111. Apparatus for the In-Place Destruction of Filed Documents. Filed June 15, 1972. Patented May 1, 1973. Not available NTIS.

Patent 3,731,262. Time Mark-Numeral Generator System. Filed Sept. 28, 1967. Patented May 1, 1973. Not available NTIS.

Patent 3,740,690. Electro-Optical Detector. Filed Mar. 14, 1972. Patented June 19, 1973. Not available NTIS.

Patent 3,740,758. Gridding and Printout Device for Meteorological Data Receiver/Recorder. Filed Sept. 1, 1971. Patented June 19, 1973. Not available NTIS.

Patent 3,741,353. Bi-Stable Brake. Filed Oct. 4, 1971. Patented June 26, 1973. Not available NTIS.

Patent 3,742,540. Passive Sonar Array Mounting and Recovery Apparatus. Filed Jan. 25, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,742,701. Propellant Injector Assembly. Filed June 16, 1971. Patented July 3, 1973. Not available NTIS.

Patent 3,742,811. Apparatus for Controlling the Fabrication of Electroexplosive Devices. Filed Aug. 13, 1970. Patented July 3, 1973. Not available NTIS.

Patent 3,742,859. Explosive Charge. Filed Apr. 2, 1965. Patented July 3, 1973. Not available NTIS.

Patent 3,742,885. Diver Operated Hand Control System for an Underwater Vehicle. Filed Sept. 24, 1971. Patented July 3, 1973. Not available NTIS.

Patent 3,742,968. Differential Pressure Relief Valve. Filed Mar. 22, 1971. Patented July 3, 1973. Not available NTIS.

Patent 3,743,184. Cylindrical Throat Nozzle With Movable Sonic Blades for Obtaining Dual Area Throat and Thrust Vector Control. Filed July 7, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,743,380. Polarized Light Source for Underwater Use. Filed Jan. 31, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,743,383. High Power Beam Combiner. Filed Mar. 23, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,743,796. Deep Sea Brushless Commutator. Filed Nov. 29, 1971. Patented July 3, 1973. Not available NTIS.

Patent 3,743,835. Laser Image and Power Level Detector Having Thermographic Phosphor. Filed Mar. 23, 1972. Patented July 3, 1973. Not available NTIS.

Patent 3,744,916. Optical Film Thickness Monitor. Filed June 8, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,744,927. Yieldable Blades for Propellers. Filed Feb. 23, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,745,076. Propellant Composition With a Nitro Containing Cross-Linked Binder. Filed Feb. 2, 1966. Patented July 10, 1973. Not available NTIS.

Patent 3,745,227. Sandwiched Eutectic Reaction Anticompromise Circuits. Filed Dec. 10, 1970. Patented July 10, 1973. Not available NTIS.

Patent 3,745,571. Coherent Digital Multifunction Processor. Filed Feb. 18, 1972. Patented July 10, 1973. Not available NTIS.

Patent 3,750,109. Multitrack Radar Display Console. Filed Sept. 13, 1971. Patented July 31, 1973. Not available NTIS.

Patent 3,752,777. Polymers of 2-(Fluorophenyl)-Hexafluoro-2-Propyl Glycidyl Ether. Filed Apr. 9, 1971. Patented Aug. 14, 1973. Not available NTIS.

Patent 3,773,947. Process of Generating Nitrogen Using Metal Azide. Patented Nov. 20, 1973. Not available NTIS.

Patent 3,775,734. Echo-Range Equalizer Sonar System. Filed May 5, 1971. Patented Nov. 27, 1973. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters,
Washington, D.C. 20546

Patent application 501,012. Nonlinear Nonsingular Feedback Shift Registers. Filed Aug. 27, 1974. PC $3.75/MF $2.25.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JANUARY 4, 1975

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-31-74
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-1-74
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	2-6-74
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	6-12-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-28-74
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-29-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	7-10-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-2-74
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-16-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-20-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	7-27-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-1-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	6-17-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-1-74
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	5-15-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	6-3-74

Expiration of patents: The patents within the range of numbers indicated below expire during December 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,814,802 to 2,818,566, inclusive
Plant Patents..... Numbers 1,661 to 1,671, inclusive

PATENT APPLICATIONS

PUBLISHED JANUARY 28, 1975
UNDER THE TRIAL VOLUNTARY PROTEST PROGRAM

NOTE-- a copy of the notice setting forth the details of the trial voluntary protest program may be found in the patent notices section of this issue.

any protests relating to the patentability of these published applications must be filed in writing before april 28, 1975. these applications are available for inspection in the indicatedgroup art unit in which they were examined.

printed copies of the published applications may be purchased from the patent office at 50 cents each.

an "index of applicants and assignees of published applications" and a concordance entitled "classification of published patent applications" are located in the back of this issue.

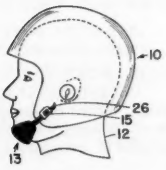
note that these entries will not be in numerical order by document ,publication. number throughout the section as for patents; numerical order is possible only within subclass.

GENERAL AND MECHANICAL APPLICATIONS

B 353,317
CHIN CUP AND CHIN STRAP FOR PROTECTIVE HEADGEAR
Elwyn R. Gooding, 120 Darwin Rd., Pinckney, Mich. 48169
Filed Apr. 23, 1973, Ser. No. 353,317
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **4 Claims**
Group Art Unit 353
References Cited

UNITED STATES PATENTS

694,986	3/1902	Pierce	2/3 R
722,049	3/1903	Saum	2/332
1,804,356	5/1931	Lowenthal	66/171 X
2,353,643	7/1944	Bulbulian	2/9 X
2,867,811	1/1959	Jones	2/3 R
3,340,542	9/1967	Greenwald	2/201 X
3,462,763	8/1969	Schneider et al.	2/3 R
3,513,482	5/1970	Holden	2/3 R
3,619,813	11/1971	Marchello	2/3 R

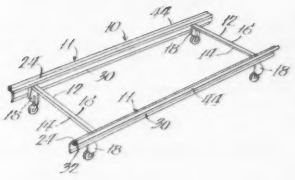


1. A chin cup and strap assembly for a helmet comprising a cup assembly consisting of a pair of sections of double knit fabric positioned in face-to-face engagement and secured at the edges thereof, said sections being stretchable in a plurality of directions so as to be readily conformable to the chin of a wearer, said sections being longer in one direction than in another direction, and stretchable straps secured to said sections so as to extend away therefrom in said longer direction.

B 399,292
BED FRAME MEMBER
Allan E. Harris, Chicago, Ill., assignor to Harris-Hub Co., Inc.
Filed Sept. 21, 1973, Ser. No. 399,292
Int. Cl. A47c *19/00*
U.S. Cl. 5—286 **16 Claims**
Group Art Unit 355
References Cited

UNITED STATES PATENTS

2,951,252	9/1960	Roche	5/279 R
3,118,151	1/1964	Fredman	5/286 X



1. A unitary and integral bed frame member adapted to support a box spring member comprising:
- a first elongated leg adapted to be positioned under said box spring member adjacent and along one marginal portion thereof, said leg having inner and outer generally parallel edges;
- an flange extending upwardly from said first leg at the outer edge thereof so as to define a confining means adaptable to enclose the corner of the marginal portion of said box spring, said flange extending generally from end to end of said first leg;
- a second leg extending downwardly from the inner edge of said first leg;
- and a resilient inverted U-shaped non-metallic runner engaged over said flange and generally coextensive therewith so as to substantially enclose and conceal said flange, whereby said box spring is protected as said flange retains said box spring against shifting.

B 379,955

SINGLE BUOY MOORING SYSTEM

Jan Versluis, Carel Van Bylandtlaan 30, The Hague; Hendrikus S. Rutten, Oosteinde 92, Voorburg, and Gerard Kruisman, Voordijk 7 Waarder, Gem. Driebruggen, all of Netherlands

Filed July 17, 1973, Ser. No. 379,955

Claims priority, application Great Britain, July 18, 1972, 33556/72

Int. Cl. B63b *35/44*

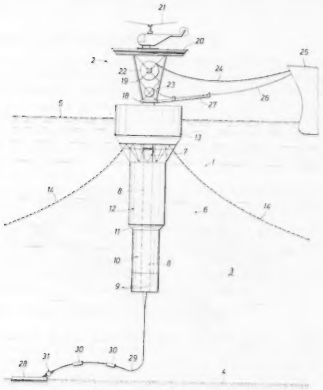
U.S. Cl. 9—8 P **9 Claims**

Group Art Unit 315

References Cited

UNITED STATES PATENTS

1,318,467	10/1919	Travell	254/178
1,575,337	3/1926	Hepworth et al.	242/129.4
1,746,995	2/1930	Edwards	137/355.2 S
3,211,121	10/1965	Dozier	114/144 B
3,352,540	11/1967	Schlechter	254/185
3,353,512	11/1967	Mathews et al.	114/235 R
3,360,810	1/1968	Busking	9/8 P
3,434,442	3/1969	Manning	9/8 P
3,595,195	7/1971	Van Eek et al.	137/230
3,742,536	7/1973	Sada	137/236



1. A single buoy mooring system for fluid transfer comprising a slender buoy body of great length, a part on the buoy body which is rotatable around a vertical axis, a first fluid conduit on the buoy body which is adapted to be connected to a pipeline at the bottom of a body of water, a counterweight-actuated hose reel mounted for free rotation about a horizontal axis on the rotatable part of said buoy body above the water, a fluid hose reelable on said hose reel for making a fluid connection between the single buoy mooring system and a ship, a pipe swivel rotatable around a vertical axis for interconnecting the fluid hose and the first fluid conduit, said fluid hose being adapted to be raised out of the water and coiled on the hose reel, a mooring line reel mounted for rotation about a horizontal axis on the rotatable part above the water line, a mooring line adapted to be coiled on the mooring line reel, and at least one counterweight vertically movable within said buoy body for acting simultaneously on the hose reel and on the mooring line reel, said counterweight being of a weight sufficient to actuate said reels and raise the hose and mooring line out of the water.

B 328,870

APPARATUS FOR IMPREGNATING TEXTILE FIBERS

Werner Naegeli, Winterthur, Switzerland, assignor to Pavena AG, Basel, Switzerland

Filed Feb. 1, 1973, Ser. No. 328,870

Claims priority, application Switzerland, Feb. 9, 1972, 1886/72

Int. Cl. D01b *3/04*

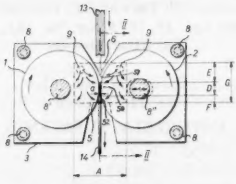
U.S. Cl. 19—66 R **18 Claims**

Group Art Unit 352

References Cited

UNITED STATES PATENTS

2,856,640	10/1958	Klein	28/1.6
3,426,389	2/1969	Naegeli	19/66 R
3,562,863	2/1971	Fornes	19/288
3,662,439	5/1972	Baken	28/1.6



1. An apparatus for continuously impregnating with a liquid a textile fiber arrangement moving in a predetermined direction of travel, comprising a pair of rotatable discs having peripheral faces and end faces, two cover plates arranged at the region of the end faces of said pair of discs, said discs being arranged with said peripheral faces opposite to each other, a liquid infeed opening in each of said cover plates, said two cover plates together with said pair of discs forming a collecting zone into which impregnating liquid is delivered from said infeed openings of said cover plates, said cover plates, viewed in the direction of travel of the fiber arrangement, having portions inclined towards the end faces of said pair of discs and extending beyond said collecting zones for forming wedge faces covering the end faces of said pair of discs after the collecting zone.

B 289,175

BURIAL CASKET

Edward R. Andrus, Jr., Mount Prospect; Dale E. Fahnstrom, Riverside; James G. Hansen, La Grange, and Charles E. Nichols, Chicago, all of Ill., assignors to Elder Wilbert Corp., Broadview, Ill.

Filed Sept. 14, 1972, Ser. No. 289,175

Int. Cl. A47b *95/02*

U.S. Cl. 27—2 **14 Claims**

Group Art Unit 335

References Cited

UNITED STATES PATENTS

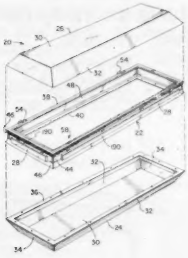
1,521,310	12/1924	Moran	217/13
1,950,118	3/1934	Lifton	217/13
3,065,517	11/1962	Dower	27/17
3,112,018	11/1963	Gehrie	190/49

FOREIGN PATENTS OR APPLICATIONS

443,255	4/1927	Germany	27/5

1. A burial casket having a generally rectangular horizontal periphery, said casket comprising a centrally open band member in the shape of the horizontal periphery of the casket, a concavo-convex lower shell member discrete from said band member, means for fastening said lower shell member to the lower edge of said band member, a concavo-convex upper shell member discrete from said band member, and hinge

means connecting said upper shell member to the upper edge of said band member, said upper and lower shell members being substantially identical in shape, said band member having a substantially uniform cross section throughout its length, said band member cross section having a substantial vertical dimension less than half the vertical dimension of the casket



and having a horizontal dimension substantially smaller than the vertical dimension of the band member cross section, and the upper and lower edges of the band member comprising flat, parallel uniplanar edge surfaces, and said upper and lower shell members having similar flat, uniplanar rim surfaces complementary in shape to said upper and lower edges.

B 395,889

SPINDLE WHIRL CLEANER

Richard J. Savageau, Seneca; Earl C. Clevenger, and Gordon C. Anderson, both of Clemson, all of S.C., assignors to Saco-Lowell Corporation, Greenville, S.C.

Filed Sept. 10, 1973, Ser. No. 395,889
Int. Cl. D03d *45/58*
U.S. Cl. 28—19 **25 Claims**
Group Art Unit 352

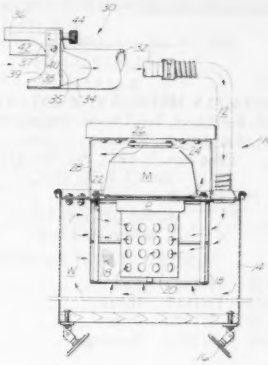
References Cited

UNITED STATES PATENTS

2,176,163	10/1939	Zimmerman	51/273 X
2,367,437	1/1945	Salt	15/323
2,744,286	5/1956	Carpenter et al.	15/415 X
3,126,021	3/1964	May	51/273 X
3,426,518	2/1969	Winter et al.	28/19 X
3,579,761	5/1971	Vaughn et al.	28/19

1. In a spindle whirl cleaner for the removal of underwound wraps of yarn from a rotating spindle assembly of a textile yarn processing machine, comprising in combination, a wheeled stool with a seat at its top and wheels at its bottom, a housing fixed therebetween containing a motor interconnected with a power source therefor, a vacuum air pump operatively interconnected with said motor for operation thereof, a yarn collection screen enclosing the air inlet of said pump and a flexible hose fixed externally to said housing and operatively associated with the external surfaces of said screen and said pump inlet, and a vacuum air inlet nozzle for said removal,, the improvement comprising:

a vacuum air inlet nozzle interconnectable at one end to said hose, said nozzle having a substantially rectangular cross-section at its other end which forms a mouth opening, said other end being formed with flat opposing side walls having arcuate ends to receive therein said rotating spindle whirl, and said opposing walls being joined by a side wall having fixed thereto, adjacent said mouth open-



ing, a member formed of an abrasive, non-metallic material for abutment with said yarn wraps and whirl.

B 425,770

PRESSURE ROLL FOR DRY FUSER APPARATUS

Raghulinga R. Thettu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1973, Ser. No. 425,770
Int. Cl. B21b *31/08*
U.S. Cl. 29—130 **6 Claims**
Group Art Unit 353

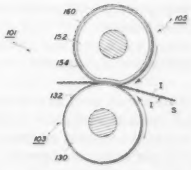
References Cited

UNITED STATES PATENTS

1,883,187	10/1932	Weber	29/130 X
2,592,134	7/1971	Paterson	29/130 X
3,152,387	10/1964	Macleod	29/130
3,447,600	6/1969	Greene	29/130 X
3,731,358	5/1973	Artl	29/132
3,795,033	3/1974	Donnelly et al.	29/132

FOREIGN PATENTS OR APPLICATIONS

18,797	1907	Great Britain	29/130
233,523	5/1925	Great Britain	29/130



1. In a dry heated pressure fusing system for fusing toner images of an electrostatic copying machine in which a heated dry fuser roll having elastomeric coating an elastomeric pressure and roll define a contact arc to fuse toner images onto copy sheets, an improved pressure roll positioned to contact the dry heated fuser roll surface comprising

a core member made of silicone rubber,
said core member being covered with a rigid, flexible sleeve member, said sleeve member being coated with a thin layer of elastomeric material of the same or lower durometer as said core member.

B 413,546
ASSEMBLY METHOD FOR ROTARY ENGINE

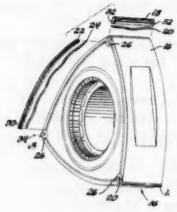
Harold W. Ferchland, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 7, 1973, Ser. No. 413,546
Int. Cl. B23p *15/00*
U.S. Cl. 29—156.4 R 3 Claims
Group Art Unit 321

References Cited

UNITED STATES PATENTS

3,353,830	11/1967	Bell	277/9.5
3,356,375	12/1967	Harris	277/9.5
3,492,710	2/1970	Pitner	29/434
3,745,630	7/1973	Bensinger	29/156.4 R



1. A method of assembling components of a rotary engine of the type having an outer housing body including a cavity, a rotor disposed in said cavity for relative rotation with said outer body, said rotor having a plurality of grooves with at least one groove containing a spring-biased seal member such that in the operation of said mechanism said seal member is urged into sealing engagement with a surface of said housing body, said method comprising
providing a said rotor, and a said seal member and spring in substantially finished manufactured condition ready for assembly,
applying a film of adherent lubricant composition to a surface of said seal which lies adjacent a wall of a said rotor groove in the operation of said engine,
inserting said spring and seal in said groove and pushing said seal against said spring so that said seal is depressed in said groove below the normal operating position of said seal, said composition adhering to said groove wall and holding said seal in said depressed position while said rotor is placed in said housing,
and then placing said rotor including said spring-biased seal in said housing, said seal subsequently being returned to its operating position by said spring, said composition being removable from said engine by vaporization and combustion during the operation of said engine.

B 354,889
GUIDE ROD FOR FEEDING CURTAIN SUSPENDERS INTO POSITION

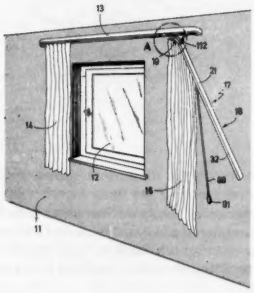
Rudolf Finkbeiner, Niederstetten, Germany

Filed Apr. 26, 1973, Ser. No. 354,889
Claims priority, application Germany, Nov. 2, 1972, 2253600
Int. Cl. B23p *19/04*
U.S. Cl. 29—241 31 Claims
Group Art Unit 321

References Cited

UNITED STATES PATENTS

2,533,367	12/1950	Gruszecki	29/270
2,917,185	12/1959	Kovacs	211/94
3,145,460	8/1964	Benedetto et al.	29/241
3,688,379	9/1972	Davis et al.	29/241



1. A guide rod for introducing curtain suspenders into a gate in curtain rails of the internal track type, said rod having
a straight portion with a runner groove externally accessible by a longitudinally extending slot,
a runner charging rod having a handle and a forward end reciprocatable in the runner groove,
a curved portion including an extension of the runner groove,
a stiffening rib in the curved portion which is centrally positioned, is substantially narrower than the runner groove slot of the internal track curtain rail into which the suspenders are to be introduced and is insertable therein for the purpose of lateral guidance and longitudinal alignment,
a guide surface at each side of the stiffening rib at the upper part of the end region of the curved portion, and
two tongues, one at each side of the runner groove slot projecting as an extension of the curved portion from the underneath part of said end region, wherein
the straight portion of the rod consists of a run of box section curtain rail capable of being mass-produced and having reinforcement elements at either side of the runner groove,
the charging rod is a length of rod capable of being manufactured by mass-production and situated externally of the runner groove in the rod,
the end of the charging rod remote from its handle is connected by connecting means with a curtain suspender pushing member situated inside the runner groove of the rod and is reciprocatable therein, the connecting means penetrating the slot in the runner groove in the rod,
the curved portion of the rod is rigidly secured as a die cast component upon the end of the straight portion of the rod,
the two tongues extend in a position in which they engage the base of the runner groove in said gate in the curtain

rail, whilst the upper surfaces of the tongues are situated below the running surface of the runner groove base of the curved portion of the rod, and

the stiffening rib is provided with an extension which extends beyond the surface supporting it and has a shape such that when in operation it bears upon the upper side of the gate when the latter is in the open position.

B 397,990

METHOD FOR RECLAIMING COLLET HOSE FITTINGS

Thomas L. Bagby, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 230,827, March 1, 1972, Pat. No. 3,787,950. This application Sept. 17, 1973, Ser. No. 397,990
Int. Cl. B23p *19/02*

U.S. Cl. 29—427 **3 Claims**

Group Art Unit 321

References Cited

UNITED STATES PATENTS

1,094,978	4/1914	Church	29/237
1,342,763	6/1920	Sarjeant	29/237
2,246,954	6/1941	Schleinitz	29/237
3,130,493	4/1964	Scudieri	29/237
3,653,114	4/1972	Bawden et al.	29/237

B 413,006

BONDING OF DISSIMILAR WORKPIECES TO A SUBSTRATE

Alexander Coucoulas, Bridgewater Township, Somerset County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 5, 1973, Ser. No. 413,006
Int. Cl. B23k *31/02*

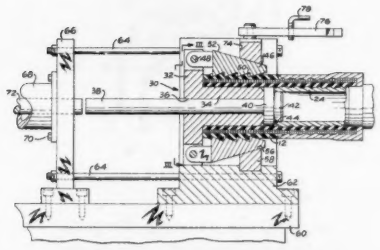
U.S. Cl. 29—471.1 **10 Claims**

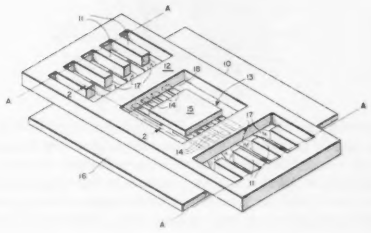
Group Art Unit 322

References Cited

UNITED STATES PATENTS

3,533,155	10/1970	Coucoulas	29/471.1
3,655,177	4/1972	Coucoulas	228/4 X
3,669,333	6/1972	Coucoulas	228/3
3,699,640	10/1972	Cranston et al.	228/3 X





1. A method of removing a coupling assembly comprising a stem, a split collet having a plurality of fingers and retaining member from the end of a hose, said method comprising the steps of:

severing said hose at a point spaced from the end of said stem thereby leaving a section of hose extending from said stem to be engaged by gripping means;

removing said retaining member from said assembly to allow the collet fingers to expand outward;

providing clamping apparatus for gripping said section of said hose;

securing the end of said hose in said clamping apparatus;

extending a plunger into the bore of said section of hose and engaging the end of said stem with said plunger; and

applying a force to the end of said stem by means of said plunger to thereby push said stem from the end of said hose.

4. Method of transmitting a mechanical bonding force to a first workpiece and a limited mechanical bonding force to a second workpiece to bond said first and second workpieces to first and second stations respectively on a substrate, said method comprising:

a. positioning a portion of the second workpiece adjacent the second station on the substrate;

b. positioning a first portion of the first workpiece adjacent the first station on the substrate and a second portion of the first workpiece adjacent that portion of the second workpiece adjacent said second station; and

c. applying mechanical bonding force to the first workpiece to deform the first portion thereof against, and bond said first portion to, the first station, and to deform the second portion of said first workpiece around said second workpiece, thereby to deform said second workpiece against, and bond said second workpiece to, said second station, the mechanical bonding force transmitted to said second workpiece being limited to that required to deform the second portion of said first workpiece around said second workpiece.

B 382,021

NEAR-INFRARED LIGHT EMITTING DIODES AND DETECTORS EMPLOYING $CdSnP_2$:InP HETERODIODES

Klaus Jurgen Bachmann, Piscataway; Ernest Buehler, Chatham; Joseph Leo Shay, Marlboro, and Jack Harry Wernick, Madison, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 315,359, Dec. 15, 1972, abandoned. This application July 23, 1973, Ser. No. 382,021

Int. Cl. B01j *17/00*

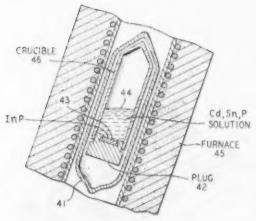
U.S. Cl. 29—576 **11 Claims**

Group Art Unit 325

References Cited

UNITED STATES PATENTS

3,614,549	10/1971	Lorenz	148/171
3,636,354	1/1972	Leheny	317/235
3,705,825	12/1972	Touchy	148/171
3,785,885	1/1974	Lockwood	148/172



1. A process for growing a heterojunction device, comprising the steps of

introducing cadmium, tin and phosphorus initially into the lower end of an elongated, generally vertically-oriented crucible, and the phosphorus and cadmium being present in respective atomic proportions greater than approximately 2:1 and the tin being present in an atomic proportion to the cadmium substantially greater than 10:1,

mounting a single crystal of InP in the upper end of said crucible and closing said crucible,

heating said crucible to a temperature in the range from 526° Centigrade to 610° Centigrade while maintaining said ends at substantially equal temperatures to produce a homogeneous solution of Cd, Sn and P,

lowering the temperature to a temperature in the range from 450° Centigrade to 510° Centigrade,

tipping the crucible to bring the solution into contact with the crystal,

inducing epitaxial growth by cooling the furnace at a rate in the range from about 1.0° Centigrade per hour to about 20° Centigrade per hour while maintaining said ends at substantially equal temperatures,

removing the resulting substantially single-crystal structure from the excess reactants, and

attaching respective electrodes to the original crystal and the grown region of said structure.

B 387,687

METHOD OF MANUFACTURING A MULTIPLE MAGNETIC HEAD

Arie Bol; Johannes Van Ginkel; Andrianus Henricus Maria van Der Schoot, and Petrus Henricus Swaanen, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 234,713, March 15, 1972, Pat. No. 3,768,154. This application Aug. 13, 1973, Ser. No. 387,687

Int. Cl. G11b *5/42*

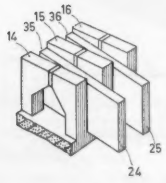
U.S. Cl. 29—603 **1 Claim**

Group Art Unit 321

References Cited

UNITED STATES PATENTS

3,402,463	9/1968	Bos et al.	29/603
3,543,396	12/1970	Illy et al.	29/603
3,562,442	2/1971	Pear, Jr.	29/603 X
3,593,414	7/1971	Beun et al.	29/603
3,668,775	6/1972	Morita et al.	29/603



1. A method of manufacturing a multiple magnetic head for magnetic data recording having at least two cores of a magnetizable material, each constituting a substantially closed path for magnetic flux, said cores being separated from each other by a spacing and screening member, the method comprising the steps of:

A. placing at least two mouldings of a magnetizable material, having machined surfaces thereon, adjacent each other with their machined surfaces facing each other;

B. cementing said mouldings to form an assembly;

C. laterally cutting through the assembly to provide at least one lateral cut space for a spacing and screening member;

D. placing a screening and spacing member in the provided space of step (C) at an angle to said lateral cut space so as to prevent unilateral engagement of said screening and spacing member against a wall of said space, thereby providing cementing spaces on both sides of said screening and spacing member, and

E. cementing said spacing and screening member in said lateral cut space by drawing adhesive into said cementing spaces by capillary action.

B 375,652
PLUG GAUGE

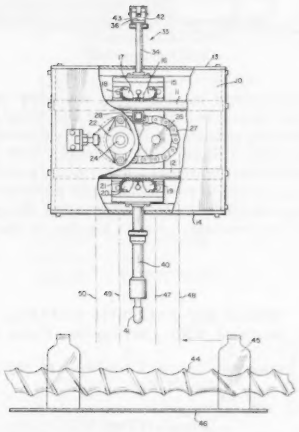
Anthony T. Zappia, Indianapolis, Ind., assignor to Ball Brothers Service Corporation, Muncie, Ind.

Filed July 2, 1973, Ser. No. 375,652
Int. Cl. G01b 3/46, 5/00
U.S. Cl. 33—178 R 4 Claims
Group Art Unit 243

References Cited

UNITED STATES PATENTS

2,596,342	5/1952	McNutt et al.	33/178 R
2,987,179	6/1960	Allgeyer et al.	209/82
3,100,570	8/1963	White	33/178 R
3,387,704	6/1968	Powers	209/82



1. A plug gauge for testing ware comprising linear guide means, a carriage mounted to reciprocate on said guide means, a plunger supported on said carriage for reciprocation transversely of the travel path of said carriage, an endless strand mounted adjacent said carriage to travel in a closed path lying in a plane parallel to the path of reciprocation of said plunger and said travel path of said carriage, means fixed to said strand means to travel about said closed path therewith and having an operative connection with said plunger for simultaneously reciprocably driving said plunger and said carriage, means to drive said strand, and means for conveying said ware along a path, a portion of which is parallel to said travel path and located directly below said plunger, said portion of said conveying means including means synchronizing the speed of travel of said ware along said portion to the speed of movement of said carriage.

B 325,261
GEAR INSPECTION TOOL

Frank D. Yagiela, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 22, 1973, Ser. No. 325,261
Int. Cl. G01b 5/24, 13/18
U.S. Cl. 33—179.5 C 2 Claims
Group Art Unit 243

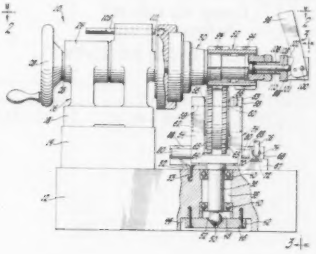
References Cited

UNITED STATES PATENTS

2,397,494	4/1946	Kuppersmith	33/DIG. 2
2,563,910	8/1951	Bean	33/179.5 B
2,563,994	8/1951	Dougherty	279/2
2,734,749	2/1956	Benjamin	82/44
2,959,282	11/1960	Pomernacki	33/179.5 B
3,069,779	12/1962	Bauer et al.	33/179.5 R
3,299,753	1/1967	Anthony	279/2

FOREIGN PATENTS OR APPLICATIONS

444,209	3/1936	Great Britain	33/179.5 C



1. A tool for inspecting lead angles at each end portion of each tooth of a helical gear, said tool comprising a base member, a rotary control spindle mounted on said base member, an expanding mandrel mounted on said spindle, a fixed sleeve member, piston means slidably mounted in said sleeve member and operatively connected to said expanding mandrel, a lever pivotally mounted on an end portion of said sleeve member, a cam surface formed on said lever in contact with an end face of said piston means for causing said piston means to expand said mandrel in response to pivotal movement of said lever once said helical gear has been manually placed around said mandrel to grippingly engage said helical gear, a vertical opening formed in said base member, a plate secured to said base member adjacent the bottom edge of said opening, a ball member rotatably mounted on said plate, a bracket member having spaced parallel side walls interconnected by a bottom wall, with the vertical center thereof being located beneath the axial midpoint between said end portions of the teeth of said helical gear, a stem member extending downwardly from said vertical center of said bottom wall of said bracket member through said vertical opening and mounted on said ball member for rotatably supporting said bracket member thereon, bearing means mounted in said vertical opening for vertically aligning and rotatably supporting said stem member, a master gear rotatably mounted on a shaft supported between said spaced parallel side walls of said bracket member, friction discs mounted intermediate the outer side surfaces of said master gear and the adjacent inner surfaces of said spaced parallel side walls for providing a sliding resistance to the rotation of said master gear, an abutment surface formed on an outer surface of one of said spaced parallel side walls of said bracket member, the plane of said abutment surface being such that it extends through the axis of said stem member, two spaced rows of teeth formed around the outer periphery of said master gear and suitable for contacting one side of said respective end portions of said helical gear teeth, an air gage, a follower member abutting against said abutment sur-

face of said bracket member, and pressure signal-actuating means operatively connected between said follower member and said air gage for causing said air gage to indicate the amount of pivot of said bracket member about said axis of said stem member as said master gear is caused to rotate during one complete revolution of said helical gear by manual rotation of said spindle, the amount of pivot corresponding to the variation in lead angles of said one side of said end portions of each and all teeth of said helical gear, with the variation in lead angles of the other side of said end portions of each and all teeth being indicated by reversing the rotation of said spindle.

B 409,816

APPARATUS TO IRON FIBERS ON A MOVING WEB

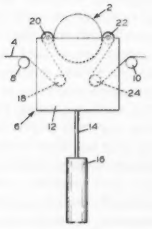
Michael J. Kolb, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Oct. 26, 1973, Ser. No. 409,816
Int. Cl. D06f *61/08*
U.S. Cl. 38—49 **4 Claims**
Group Art Unit 353

References Cited

UNITED STATES PATENTS

262,491	8/1882	Smith	38/9
2,866,282	12/1958	Fredholm	38/59
3,110,612	11/1963	Gottwald et al.	34/116 X



1. An apparatus for processing a moving web comprising a drum having a surface conditioned to process one surface of the moving web, inlet guide means guiding the moving web towards the drum and outlet guide means guiding the moving web away from the drum, and a guide means positioned adjacent the drum to guide the moving web around a portion of the peripheral surface of the drum, a carriage structure, said guide means being mounted on said carriage structure whereby the moving web can be held in an operative position in contact with the periphery of the drum and in another inoperative position out of contact with the periphery of the drum, and said guide means being so constructed and arranged that it will automatically take up any slack in the moving web as the 4oving web is moved from a curved path in tontact with the drum to a straight-line path out of contact, but adjacent to the drum.

B 437,172

SELF-RETAINING MAGAZINE PLUG

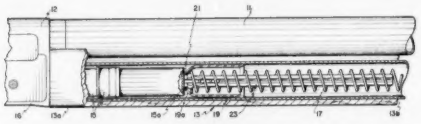
Val A. Browning, Ogden, Utah, assignor to Browning Arms Company, Morgan, Utah

Substitute for Ser. No. 244,612, April 4, 1972,. This application Jan. 28, 1974, Ser. No. 437,172
Claims priority, application Canada, Feb. 1, 1973, 162609
Int. Cl. F41c *25/08, 25/00*
U.S. Cl. 42—49 A **7 Claims**
Group Art Unit 221

References Cited

UNITED STATES PATENTS

1,041,109	10/1912	Lewis	42/49 A
1,061,787	5/1913	Simpson	42/49 A
2,026,252	12/1935	Russell et al.	42/49 A
2,511,505	6/1950	Hemmerling	42/49 A
2,635,378	4/1953	Pickney	42/49 A
3,371,440	3/1968	Cassell	42/1 R



2. A self-retaining magazine plug according to claim **1**, wherein said means includes said one end being bifurcated into substantially separated complementary portions and protuberances formed slightly back of the free ends of each of said complementary portions such that as said complementary portions are pressed to the aperture, said protuberances bear against the wall of the follower surrounding the aperture to pinch the complementary portions together to pass the aperture.

B 418,302

SHIELD FOR BALLISTIC CUTTERS

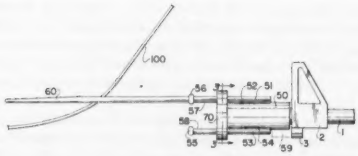
Daniel D. Musgrave, 8201 Caraway St., Cabin John, Md. 20731

Filed Nov. 23, 1973, Ser. No. 418,302
Int. Cl. F41c *27/04*
U.S. Cl. 42—90 **9 Claims**
Group Art Unit 221

References Cited

UNITED STATES PATENTS

655,577	8/1900	Pell et al.	42/90
1,211,779	1/1917	Steinmetz	42/90
3,657,835	4/1972	Musgrave	42/90



1. In a ballistic cutting implement for mounting on a muzzle of a firearm, shield means positionally adapted for deflecting solid particles moving generally toward the rear of said firearm, said shield means having a portion adapted for folding.

5. A ballistic cutting implement comprising: a housing adapted

to be fixed on a muzzle of a firearm with the longitudinal axis of said firearm substantially coincident with one axis of said housing; a first lug affixed to said housing with one axis of said lug substantially parallel to but not coincident with said longitudinal axis, said lug being positionally adapted for engagement with a strand to be cut; a second lug affixed to said housing with one axis of said second lug substantially parallel to but not coincident with said longitudinal axis, said second lug being positionally adapted for engagement with a strand to be cut, and the respective said axes of said first lug, said second lug, and said firearm being positioned in the same plane; detent means on at least one said lug positionally adapted for maintaining the engagement of said lug with said strand; and shield means positionally adapted for impeding particles deflected toward the rear of said firearm when material is cut ballistically.

B 308,661

TOY VEHICLE KIT HAVING LOCKING PIN THROUGH ENGINE, CHASSIS AND PAN

Vernon R. Wamsley, Wayzata, and Gerald A. Cuhel, Glencoe, both of Minn., assignors to Tonka Corporation, Minneapolis, Minn.

Filed Nov. 22, 1972, Ser. No. 308,661
Int. Cl. A63h *17/00*
U.S. Cl. 46—17 **1 Claim**
Group Art Unit 333

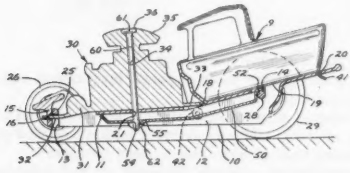
References Cited

UNITED STATES PATENTS

2,587,142	2/1952	Gray et al.	46/17
2,749,660	6/1956	Zimentstark	46/223 X
2,916,851	12/1959	Graschen	46/221
3,528,193	9/1970	Yamakawa	46/17
3,736,696	6/1973	Laird et al.	46/22 X

FOREIGN PATENTS OR APPLICATION

760,236	10/1956	Great Britain	46/17
615,304	7/1935	Germany	46/26
325,235	2/1936	Great Britain	85/58



1. In a toy vehicle kit comprising various components adapted to be selectively assembled and disassembled,

a. a chassis having transversely extending front and rear recesses for receiving front and rear axles, one of said recesses opening upwardly and one opening downwardly with respect to said chassis,

b. front and rear wheel carrying axles adapted to be seated in said recesses,

c. an engine adapted to be seated on the chassis upwardly thereof and including means to lock the front axle in said front recess,

d. a body adapted to be seated on the chassis upwardly thereof adjacent said engine and including means to lock the rear axle in said rear recess,

e. a pan adapted to extend along the underside of the chassis and lock the body to the chassis, and

f. means coacting with said pan for locking the engine and pan to the chassis including a pin for extending through the engine, chassis, and pan and being rotatable between locking and unlocking positions.

B 389,932

RAILWAY CAR DOOR CONTROL MECHANISM

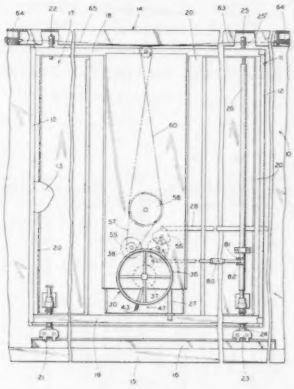
Thomas G. Paterson, Calumet Twp., Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Aug. 20, 1973, Ser. No. 389,932
Int. Cl. E05d *15/10*
U.S. Cl. 49—220 **9 Claims**
Group Art Unit 351

References Cited

UNITED STATES PATENTS

1,803,725	5/1931	Ottinger	49/281 X
2,843,375	7/1958	Lesage	49/220
3,750,335	8/1973	Marsh	49/220



1. A vehicle door movable laterally into and out of the opening of a door frame and slidable between a position over the opening and one side of said opening, a rod rotatably connected to said door, crank arms on said rod rotatably connected to said door frame to provide for lateral movement of said door, locking bolt means slidably connected to said door and movable into and out of locking relation relative to said door frame, the improvement comprising,

a shaft rotatably supported on said door,

means on said shaft for rotating the same,

actuating means on said door,

first linkage means connected to said actuating means and said rod for rotating the same in response to movement of said actuating means,

second linkage means connected to said bolt means and to said actuating means for moving said bolt means in response to movement of said actuating means,

a mechanism for moving said door to one side of said opening including a tension member anchored on said frame adjacent said opening,

a rotatable member on said door connected to said tension member whereupon rotation of said rotatable member said door is moved between a position over the opening and a position on one side of the opening,

said actuating means including a first driven member,

a second driven member connected to said rotatable member for rotating the same, each of said driven members being laterally spaced apart in a vertical plane and arranged substantially parallel to the plane of said door,

a drive member rotatable in response to rotation of said shaft, and

a gear-type power transfer means engaging said drive member and arranged to be shifted relative to said drive member into selective engagement with either one of said laterally spaced apart first and second driven members so

as to effect rotatable driving of either one of the engaged driven members upon rotation of said shaft and drive member.

B 389,933

RAILWAY CAR DOOR CONTROL MECHANISM

Willis H. Knippel, Palos Park, Ill., and Walter J. Marulic, Gary, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Aug. 20, 1973, Ser. No. 389,933

Int. Cl. E05d *15/10*

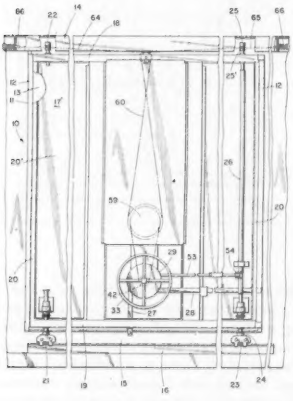
U.S. Cl. 49—220 **10 Claims**

Group Art Unit 351

References Cited

UNITED STATES PATENTS

1,803,725	5/1931	Ottinger	49/281 X
2,553,511	5/1951	Casey, Sr.	49/358
2,843,375	7/1958	Lesage	49/220
3,750,335	8/1973	Marsh	49/220



7. A railway car having a side including a frame and a door opening, a door slideable relative to said opening from a closed position to an open position on one side of said opening, locking bolt means on said door movable into engagement with said frame in the closed position, a shaft rotatably mounted on said door and extending laterally outwardly of said door, an actuating means connected to said bolt means for engaging and disengaging the same from said frame, the improvement comprising:

a mechanism for moving said door between open and closed positions, including:

an anchoring member supported on said frame,

a force multiplying member rotatably mounted on said door and connected to said anchoring member,

said shaft being mounted on said door for axial movement, keying means on said shaft selectively engageable with said force multiplying member upon axial movement of said shaft whereby during rotation of said shaft said force multiplying member is rotated so as to effect sliding movement of said door, and

means on said shaft being operably disengaged from said actuating means during selective engagement of said keying means on said shaft with said force multiplying member.

B 430,798

GATE ASSEMBLY

John P. Lynch, Vermillion, and Delmar J. Lynch, Burbank, both of S. Dak., assignors to Theodore J. Dolney, Vermillion, Clay County, S. Dak., a part interest

Filed Jan. 4, 1974, Ser. No. 430,798

Int. Cl. E05d *15/28*

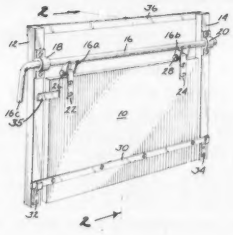
U.S. Cl. 49—246 **5 Claims**

Group Art Unit 351

References Cited

UNITED STATES PATENTS

1,209,400	12/1916	Cox	49/253
1,247,186	11/1917	Wampach	49/253
3,768,203	10/1973	Bellucci	49/254



1. A gate assembly comprising:

a. a gate member having spaced longitudinal edges and spaced transverse edges;

b. a support adjacent each of said transverse edges defining an opening, said gate member having a locked position closing said opening, and an open position;

c. a crankshaft rotatably mounted on and extending between said supports adjacent one of said longitudinal edges, said crankshaft including a handle at one end, and crank arm means with a free end movable over center between gate locking and gate opening positions;

d. latch means on at least one of said gate member and supports generally adjacent the other of said longitudinal edges for latching said other longitudinal edge to said supports in the locked position of the gate member and for releasing said gate member upon movement of said one longitudinal edge a predetermined distance away from the locked position;

e. hinge means for pivotally connecting said free end of said crank arm means to said one longitudinal edge to permit positioning of said gate member in the locked position with said latch means engaded, or alternately to permit said one longitudinal edge of said gate member to be pivoted on the pivotal connection of said hinge means over center to release said latch means after a predetermined amount of morement over center; and

f. means for opposing the movement of said gate member from said over center locked position.

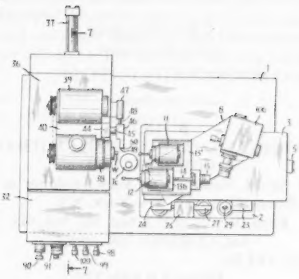
B 325,102
INTERNAL GRINDER

Youji Tatsumi, 1-chome, Higashinakayama-cho, Funabashi; Shohei Ito, 2-chome, Sekibara-cho, Adachi-ku, Tokyo, and Katsutoshi Ishii, 3-chome, Kounodai, Ichikawa, all of Japan

Filed Jan. 19, 1973, Ser. No. 325,102
Claims priority, application Japan, Jan. 19, 1972, 47-7415; Jan. 19, 1972, 47-7417; Jan. 19, 1972, 47-7418; Jan. 19, 1972, 47-7419
Int. Cl. B24b *5/06*
U.S. Cl. 51—3 5 Claims
Group Art Unit 323

References Cited
UNITED STATES PATENTS

2,139,896	12/1938	Johnson	51/165.93 X
2,513,228	6/1950	Arnes et al.	51/165.93 X
3,197,921	8/1965	Hohler et al.	51/165.93 X
3,430,388	3/1969	Gabrielli	51/3
3,634,978	1/1972	Uhtenuoldt	51/3



1. A grinding machine comprising, support means, a first grinding wheel head table mounted movably on said base, a second grinding wheel head table transported on said first grinding wheel table and mounted for oblique movement relative to a direction of travel of the first grinding wheel head table, means mounting a plurality of driven grinding wheel spindles for driving a plurality of grinders for grinding a workpiece, a feed-in table mounted movably on said support means for movement relative to said first grinding wheel to feed in operation a workpiece to the grinders individually, a shift table mounted on said feed-in table for movement therewith and relative thereto, means mounting a workpiece-holding means for supporting a workpiece thereon, and means for moving said tables individually and including means moving them jointly for relatively positioning a work-piece on said shift table accurately relatively with said grinders individually in registry with said workpiece for grinding thereon and means to relatively feed at a progressively decreasing rate the grinders and workpiece for executing accurate and controlled grinding of the workpiece.

B 353,546
SPARK PLUG CLEANER

Karl J. Romanowicz, Jr., 7709 W. Bobolink Pl., Milwaukee, Wis. 53218

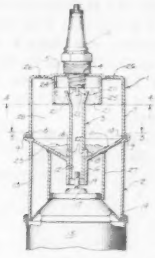
Filed Apr. 23, 1973, Ser. No. 353,546
Int. Cl. B24c *3/34*
U.S. Cl. 51—8 SP 10 Claims
Group Art Unit 323

References Cited
UNITED STATES PATENTS

1,537,902	5/1925	Triggs	51/8
2,007,844	7/1935	Baliko	51/8
2,222,518	11/1940	Rabezzana	51/8
2,253,225	8/1941	Bowes	51/8
2,458,825	1/1949	Battey	51/8
2,475,215	7/1949	Barker	51/8
2,846,820	8/1958	Persak	51/8
3,435,561	4/1969	Mori	51/8
3,604,156	9/1971	Diggs	51/8

FOREIGN PATENTS OR APPLICATIONS

829,262	1/1952	Germany	51/8
690,408	6/1930	France	51/8



1. A spark plug cleaner comprising a sand blast nozzle, means to support a spark plug with its face aligned with the discharge from said nozzle, a canister of pressurized gas, and adapter means to mount said nozzle upon said canister of pressurized gas for operating the nozzle.

B 311,910
DEVICE FOR DEBURRING WORK PIECES

Jurgen Schmidt, Olevianweg 11, Herborn, and Jurgen Hesse, Zietenstr. 49, Dusseldorf, both of Germany

Filed Dec. 4, 1972, Ser. No. 311,910
Claims priority, application Germany, Dec. 2, 1971, 2159838
Int. Cl. B24c *3/30*
U.S. Cl. 51—13 4 Claims
Group Art Unit 323

References Cited
UNITED STATES PATENTS

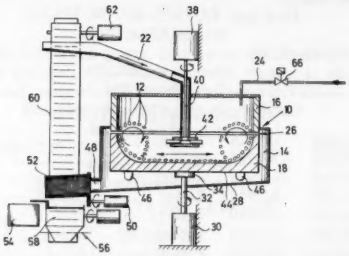
1,423,128	7/1922	Liedtke	51/15
2,299,020	10/1942	Jones	51/164
2,330,949	10/1943	Braun	51/13
3,445,966	5/1969	Moore	51/9

FOREIGN PATENTS OR APPLICATIONS

808,521	2/1959	Great Britain	51/164

1. A device for deburring work pieces of rubber or similar material comprising an essentially closed container for receiving the work pieces, supplies of a low-temperature medium and a blasting agent and conduit means for introducing them into the container, the container including a bottom trough section rotatable about its vertical axis and a fixed upper section forming a vertical extension of the bottom trough

section, means for rotating the bottom trough section, a centrifuging wheel in the container associated with the conduit



for the blasting agent for introducing the blasting agent into the container, and means for rotating the centrifugal wheel.

B 391,437

APPARATUS FOR FOLLOWING A PREVIOUSLY SHAPED SURFACE OF A WORKPIECE AND FOR REMOVING STOCK FROM SUCH SURFACE WITHOUT SIGNIFICANTLY CHANGING THE SHAPE THEREOF

Harry Pedersen, Rochester, and Philip F. White, Victor, both of N.Y., assignors to The Gleason Works, Rochester, N.Y.

Filed Aug. 24, 1973, Ser. No. 391,437

Int. Cl. B24b *19/08*

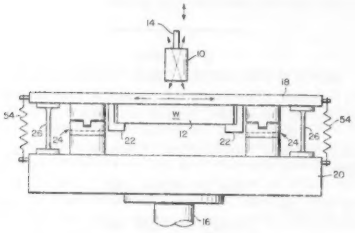
U.S. Cl. 51—33 W **7 Claims**

Group Art Unit 323

References Cited

UNITED STATES PATENTS

1,651,533	12/1927	Maynard	51/168
1,666,746	5/1928	Maynard	51/168 X
1,840,254	1/1932	Richardson	51/209 R
1,959,900	5/1934	Brown et al.	51/56
1,977,952	10/1934	Offenbacher	51/206 R
2,836,936	6/1958	Lovely	51/50 R
3,757,474	9/1973	Pederson	51/33 W



1. In a stock removing machine of the type in which a working tool is mounted and rotated about an axis of a rotatable spindle for being brought into contact with a surface of a workpiece supported for rotation relative to the working tool, the improvements in said machine which comprise:

first resilient means interconnecting the working tool with said rotatable spindle to permit limited angular displacement of the axis of the working tool relative to its axis of rotation when an angular force develops between the working tool and the rotatable spindle,

a supporting means for said workpiece, including (a) a table means which can be rotated to impart rotation to the workpiece, (b) a holding means spaced from said table means for suspending the workpiece out of contact with the table means, and (c) coupling means interposed between said table means and said holding means for preventing relative angular rotation between the table means and the holding means while permitting radial displacement between the table means and the holding means, and

second resilient means in the form of spring elements interconnected between said table means and said holding means for permitting limited radial displacement of the workpiece relative to the axis of rotation of said working tool for the purpose of developing a predetermined radial force between the working tool and the workpiece so that the workpiece can precisely adjust its position according to a previous shape of said surface of said workpiece.

7. In a stock removing machine of the type in which a working tool is mounted and rotated about an axis for being brought into contact with a surface of a workpiece supported on a table means for rotation relative to the working tool, the improvement comprising

a holding means for securing said workpiece relative to said table means,

resilient means in the form of a plurality of beam spring structures interposed between said holding means and said table means to permit limited radial movement of the holding means relative to the table means to develop and maintain a predetermined radial force between the working tool and the workpiece, and individual members of said plurality of beam spring structures having free end portions which can be brought into and out of engagement with receiving structures associated with said holding means or said table means, and including control means for selectively actuating said individual members into and out of engagement relative to respective receiving structures to thereby adjust the force between said workpiece and said working tool at selected positions on said workpiece surface.

B 318,745

CAM CONTROLLED MACHINE TOOLS WITH CONTOUR COMPENSATOR

William B. Seidel, Birmingham, Mich., assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Dec. 27, 1972, Ser. No. 318,745

Int. Cl. B24b *17/00, 49/00*

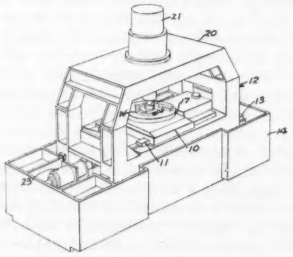
U.S. Cl. 51—101 R **5 Claims**

Group Art Unit 323

References Cited

UNITED STATES PATENTS

2,282,038	5/1942	Davenport	125/11 TP
3,469,495	10/1969	Kelly	318/578 X
3,653,161	5/1972	Clark	51/49 X
3,750,345	8/1973	Kolesar	51/101 R

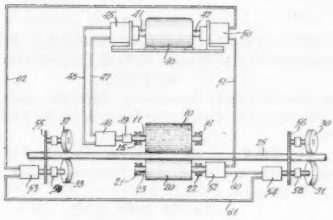


1. In a machine tool, the combination comprising

means for supporting a workpiece,
a tool,
means for supporting the tool for movement relative to the workpiece,
a cam,
a cam follower,
means controlled by the cam follower for moving the tool and the workpiece relative to one another in accordance with the position of the cam follower on the cam,
programmable means for providing a change in movement of the tool relative to the workpiece at any desired point on the cam,
said programmable means including a plurality of memory locations corresponding to varying positions of the cam follower on the cam,
means for applying information to each location,
means responsive to the imformation corresponding to the information at another location and operable to prevent the information which exceeds a predetermined value from said first-mentioned location from passing to the means for controlling the relative positions of the workpiece and tool.

B 332,811
CENTERLESS GRINDER WITH HYDRAULIC DRIVE
Robert L. Schaller, Camilius, N.Y., assignor to Sundstrand Syracuse, Inc., Syracuse, N.Y.
Filed Feb. 16, 1973, Ser. No. 332,811
Int. Cl. B24b *5/22*
U.S. Cl. 51—103 TF **7 Claims**
Group Art Unit 323
References Cited
UNITED STATES PATENTS

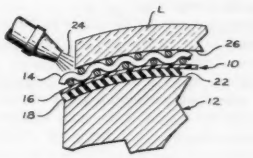
2,073,079	3/1937	Theler et al.	51/103 TF
3,534,507	10/1970	Barhorst	51/103 R



1. In a centerless grinder, a grinding wheel and a coacting regulating wheel, a first hydrostatic transmission for driving said grinding wheel, a second hydrostatic transmission for driving the regulating wheel, each of said transmissions including a pump and a motor, and a main motor having output shaft means connected to the pumps of both of said hydrostatic transmissions whereby the regulating wheel functions to assist said main motor when the regulating wheel is functioning as a brake.

B 359,825
LENS SURFACING PADS AND METHOD OF MAKING THE SAME
Bertram R. Goodwin, Feeding Hills, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed May 14, 1973, Ser. No. 359,825
Int. Cl. B24d *11/02, 17/00, 9/00*
U.S. Cl. 51—395 **14 Claims**
Group Art Unit 323
References Cited
UNITED STATES PATENTS

2,085,211	6/1937	Budds	51/406
2,286,208	6/1942	Kirchner	51/406
2,752,738	7/1956	Seifert	51/284 X
3,144,737	8/1964	Faas	51/284 X
3,225,497	12/1965	Brandt	51/284 X
3,522,680	8/1970	Sarofeen	51/358
3,583,111	6/1971	Volk	51/358
3,699,721	10/1972	Beasley	51/358 X



1. A disposable lens surfacing pad comprising the laminate of:
a sheet of foraminous material;
a thin film of highly abrasion and puncture resistant material sealed to one side only of said sheet of foraminous material, the opposite side of said sheet being exposed for direct contact with a lens to be surfaced; and
a layer of adhesive on said film for detachably securing said pad to said rigid lens surfacing tool as a tool facing; whereby
said film component of said laminate prevents the material of said adhesive from penetrating said sheet of foraminous material and contaminating a lens placed thereagainst under pressure for surfacing by said tool.

12. The method of making a disposable lens surfacing pad comprising the steps of:
bringing a sheet of foraminous material and a thin film of highly abrasion and puncture resistant material flatly into side-by-side relationship with each other;
heating the combination of said sheet of foraminous material and film and pressing the combination together at a temperature and with a pressure suitable for effecting a bond therebetween; and
applying a layer of adhesive material to said film.

B 346,145

GRILLE OR DIVIDER FOR A WINDOW SASH

Robert F. Bischoff, Jr., 375 Sanford Ave., Lyndhurst, N.J. 07071

Filed Mar. 29, 1973, Ser. No. 346,145
Int. Cl. E06b *9/01*
U.S. Cl. 52—456 **1 Claim**
Group Art Unit 354

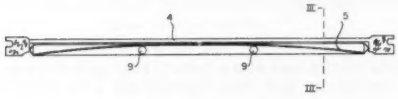
References Cited

UNITED STATES PATENTS

2,167,816	8/1939	Small	52/506
3,386,219	6/1968	Beil	52/456
3,411,258	11/1968	Kessler	52/456
3,474,587	10/1969	Martin	52/456

FOREIGN PATENTS OR APPLICATIONS

67,156	7/1948	Denmark	52/495



1. A divider grille for use in a window sash of the type including a large-area glazing pane to simulate subdivision of said pane into the appearance of a plurality of smaller panes, said divider grille comprising:

1. at least one elongated grille element, having an element face adapted to engage the glazing pane when said divider grille is installed in said window sash;
2. said grille element housing an elongated reinforcing member extending within the grille element interior for substantially the length of the grille element;
3. said reinforcing member being of tempered resilient material preset by said tempering into an arced configuration along its length;
4. the protuberant portion of the arc configuration being positioned in said grille element nearer to said element face thereof than are the ends of the arc configuration;
5. whereby upon installation of said divider grille in said window sash, said reinforcing member resiliently urges said grille element face into contact with said glazing pane and resiliently opposes floatation of said divider grille away from said glazing pane.

B 331,557

JOINT RETENTION CLIP FOR A BUILDING WALL STRUCTURE

Bobby G. Vare, R.R. #1, Milton, Ind. 47357

Filed Feb. 12, 1973, Ser. No. 331,557
Int. Cl. F04c *2/08*
U.S. Cl. 52—489 **4 Claims**
Group Art Unit 354

References Cited

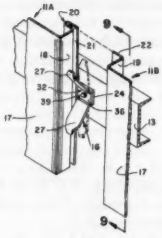
UNITED STATES PATENTS

2,642,968	6/1953	Roush et al.	52/522 X
3,209,503	10/1965	Mosteller	52/478 X
3,300,934	1/1967	Waizenhofer	52/489 X
3,394,519	7/1968	Tischule	52/478
3,603,057	9/1971	Curran	52/478

1. In a joint between adjacent panels wherein said panels present confronting first and second side walls extending inwardly toward a supporting structure, a female lip extending laterally from the first side wall and inwardly of the panel, a male lip extending laterally from the second side wall into said female lip, the improvement comprising:

first means for securing said female lip to said supporting structure; and

second means for retaining said male lip engaged with said female lip, including at least one wing element extending outwardly from said supporting structure and presenting a longitudinal edge in confronting relation with a face of the second side wall which is remote from the first side wall, said wing element being flexible in a direction parallel with the second side wall and being relatively inflexible in a direction normal to the second side wall;



said female lip presenting a terminal flange portion extending laterally of said first and second side walls and inwardly of said second panel;

a base formed integrally with said wing element and engaged with said terminal flange portion; and

said first means for securing said female lip to said supporting structure comprising a fastener extending through said base and said terminal flange portion.

B 322,777

METHOD FOR MAKING CARTRIDGES CONTAINING PRESSURE GAS AND MEANS FOR CARRYING OUT THIS METHOD

Franz Josef Overkott, Gevelsberg, Germany, assignor to Carl U. Peddinghaus, Wuppertal-Barmen Obere Lechtenplatzer, Germany

Filed Jan. 11, 1973, Ser. No. 322,777
Claims priority, application Germany, Jan. 11, 1972, 2201177; Dec. 14, 1972, 2261277
Int. Cl. B65b *31/02*
U.S. Cl. 53—7 **5 Claims**
Group Art Unit 324

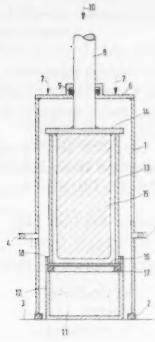
References Cited

UNITED STATES PATENTS

1,790,787	2/1931	Badger	53/83
2,685,383	8/1954	Kochner	53/83 X
3,440,797	4/1969	Spielmann	53/7 X

1. A method of making cartridges containing a pressurised gas, particularly for use in hydro-pneumatic oscillation dampers, comprising fitting the cartridge with a loosely fitted sealing cap lying on a sealing ring surrounding an opening of the cartridge, subjecting the cartridge to a pressurised gas until it has filled with the pressurised gas, pressing the sealing cap against the sealing ring of the cartridge with a pressure ex-

ceeding the pressure inside the cartridge, subjecting the cartridge and sealing cap to normal ambient atmospheric pressure and firmly securing the sealing cap to the outer wall of the cartridge.



B 417,299
PROCESS FOR CONTINUOUSLY FORMING COMPARTMENTED PACKAGES

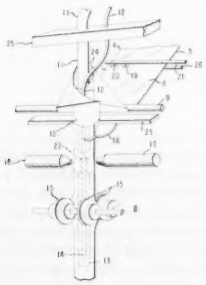
Theodore E. Brown, Jr., Mickleton, N.J., and Frank M. Willis, Hedgesville, W. Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 303,054, Nov. 2, 1972, Pat. No. 3,795,081. This application Nov. 19, 1973, Ser. No. 417,299
Int. Cl. B65b *9/12*
U.S. Cl. 53—28 **7 Claims**
Group Art Unit 324

References Cited
UNITED STATES PATENTS

2,040,953	5/1936	Poppe	93/35 PC
2,771,724	11/1956	Hosier et al.	53/28 X
2,913,861	11/1959	Macneale	53/28
3,380,226	4/1968	Tracy	53/138 A
3,608,709	9/1971	Pike	206/47 A

3,041,748	7/1962	Wetzel	15/340 R
3,460,330	8/1969	Black, Jr.	56/328 R
3,756,001	9/1973	Macidull	56/328 R



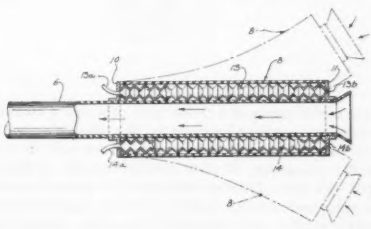
1. A process for forming a series of compartmented packages comprising:
   a. continuously drawing a web of pliable film material into a convoluted cylindrical forming member having at least two tubular filling members passing therethrough, said film material being formed in said forming member into a convoluted tube into which said filling members extend and which has single-ply and double-ply wall portions, said web being drawn into, and said convoluted tube being continuously advanced through and past, said forming member by tube-advancing means in frictional engagement with said tube;
   b. bringing said continuously advancing convoluted tube into a confronting relationship with sealing means adapted to produce a seal between facing surface zones of the inner ply and the outer ply of the double-ply wall portion of said tube in a manner such as to form, as the tube advances, a continuous linear juncture between plies adjacent the outer edge of said web substantially parallel to the longitudinal axis of said tube, said inner ply dividing said tube into compartments, and each of said filling members extending into a different one of said compartments;
   c. continuously feeding a stream of fluent material into each of said filling members and discharging said material from said members into the compartments of said continuously advancing compartmented tube, the material fed into each filling member being different in composition from that fed into every other filling member;
   d. bringing the filled portion of said continuously advancing compartmented tube into periodic engagement with constricting and sealing means which constricts the tube at spaced intervals and applies a pair of successive encircling closure means to each constricted area; and
   e. severing said tube in the constricted areas between each pair of closure means.

B 380,900
VACUUM CONDUIT PICK-UP DEVICE

Daniel E. Cardinal, Jr., Lake Forest, Ill., 1352 Estate Lane, Lake Forest, Ill. 60045

Filed July 19, 1973, Ser. No. 380,900
Int. Cl. A01g *19/08*
U.S. Cl. 56—328 R **7 Claims**
Group Art Unit 333

References Cited
UNITED STATES PATENTS



1. A device for picking up fruit or other materials comprising, in combination:
   a. a frame,
   b. an elongated flexible conduit mounted on said frame and with said flexible conduit having an outer end mouth for engaging the said materials,
   c. means for vacuumizing said conduit so that the said materials will flow through said conduit from said mouth,
   d. a plurality of tubular flexible longitudinally expandable members disposed along and generally parallel to the outer end portion of said flexible conduit,
   e. and means to expand said flexible expandable members to thereby support the wall of said flexible conduit and

hold it in a relatively rigid position at a desired angle of disposition.

B 376,742

APPARATUS FOR MOUNTING PORTABLE MANUALLY OPERATED YARN KNOTTER MECHANISMS ON YARN PROCESSING MACHINES

Gustav Frazen, Neersen Bezirk Duesseldorf, and Helmut Veltges, Krefeld, both of Germany, assignors to Palitex Project-Company GmbH, Krefeld, Germany

Filed July 5, 1973, Ser. No. 376,742

Claims priority, application Germany, July 12, 1972, 2234211

Int. Cl. D01h *15/00*

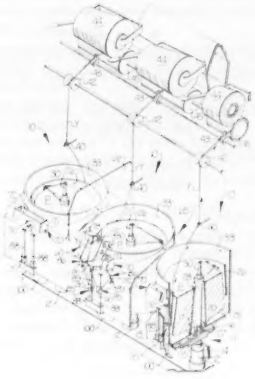
U.S. Cl. 57—34 R **10 Claims**

Group Art Unit 246

References Cited

UNITED STATES PATENTS

268,622	12/1882	Chase	289/17
498,185	5/1893	McVeigh	289/17
623,925	4/1899	McVeigh	289/17
916,883	3/1909	Martin	242/37 A
3,117,738	1/1964	Raasch et al.	289/17 X
3,731,478	5/1973	Franzen	57/58.7
3,805,507	4/1974	Steppuhn	57/34 R



1. In the combination of a textile yarn processing machine, such as a twister, spinning frame or the like, having a plurality of spindle assembly means positioned in side-by-side relationship for the processing of yarn, control means operatively connected with each of said spindle assembly means for selectively stopping and starting operation of said respective spindle assembly means, and a manually operated, portable yarn knotter mechanism for knotting together two ends of broken or otherwise separated yarn at selected spindle assembly locations; the improvement of

holder means mounted stationary on said yarn processing machine in front of each said spindle assembly means and including means for releasably receiving and mounting said yarn knotter mechanism at the desired knotting location in front of selected spindle assembly means for a yarn knotting operation at the selected spindle assembly means eliminating the necessity of the operator holding said portable yarn knotter mechanism and actuating means operatively connected with the respective control means and responsive to reception and mounting of said yarn knotter mechanism in said respective holder means for actuating said control means to stop operation of said respective spindle assembly means for a yarn knotting operation.

B 424,748

THREAD SUCTION TUBE CONNECTION

Oscar Grossi, Bologna, Italy, assignor to Cogne Macchine Tissili Cognetex S.p.A., Imola, Italy

Filed Dec. 14, 1973, Ser. No. 424,748

Claims priority, application Italy, Jan. 17, 1973, 47751/70

Int. Cl. D01h *5/68*

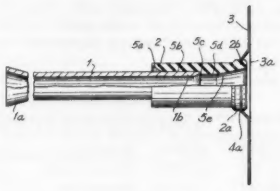
U.S. Cl. 57—34.5 **2 Claims**

Group Art Unit 246

References Cited

UNITED STATES PATENTS

2,825,198	3/1958	Krahschutz	57/34.5
2,840,862	7/1958	Hewitt	57/34.5 X
2,843,995	7/1958	Furstenberg	57/34.5



1. A thread suction tube and a tube carrier adapted for communicating with a suction channel of a spinning machine comprising in combination: a suction tube having an axial smooth bore with a flared inlet orifice and which is made of an antistatic rigid material, and a tube carrier shaped in the form of a sleeve and made of an elastically deformable material; said sleeve having an axial conduit comprising a flared end adapted to facilitate the insertion of the rear end of the suction tube and which has a radius forming a conical section, the diameter of the more restricted cross-sectional area is less than the outer diameter of the suction tube; said conical section ending with an annular shoulder, the inner edge of which defines the entrance of a cylindrical section of said conduit, having a diameter substantially equal to the inner diameter of the suction tube and having a flared end; and means being provided to sealingly connect the said tube carrier to an entrance orifice provided in the side wall of the suction channel.

B 294,103

COMPOSITE YARN FORMING METHOD AND APPARATUS

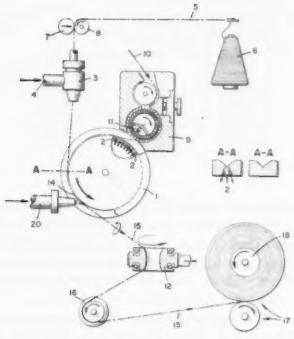
Emilian Bobkowicz; Andrew John Bobkowicz, and Margaret Mary Lefebvre, 1435 St. Alexander St., Room 310, all of Montreal, Quebec, Canada

Filed Oct. 2, 1972, Ser. No. 294,103
Claims priority, application Canada, July 6, 1972, 146543
Int. Cl. D01h *13/30, 1/12*
U.S. Cl. 57—35 14 Claims
Group Art Unit 246

References Cited

UNITED STATES PATENTS

2,289,568	7/1942	Bloch	57/34 R
2,743,572	5/1956	Hiensch	57/34 HS
3,445,993	5/1969	Vorisek	57/58.95 X
3,494,118	2/1970	Bobkowicz et al.	57/35
3,548,581	12/1970	Bobkowicz et al.	57/35 X



5. Apparatus for producing composite spun yarn which comprises: a rotatable circumferentially grooved roll; means for simultaneously introducing into the groove of said roll three components, namely a carrier strand, a tacky polymer and staple fibers; tension control means through which said carrier filament passes before being directed into the groove of said roll; a spindle following said grooved roll through which the yarn coming out of the groove is passed, said spindle imparting a twist to said yarn which is transmitted back into the groove where the three components are thus twisted into spun yarn, said spindle being positioned at an angle with respect to said grooved roll such as to impart tension and force the strand in the groove against the bottom of said groove; at least one pulling device following said spindle to maintain the yarn under positive pull; and a wind-up arrangement for linearly winding the obtained composite spun yarn on a collecting roll.

B 377,172

CERAMIC-LINED COMBUSTION CHAMBER AND MEANS FOR SUPPORT OF A LINER WITH COMBUSTION AIR PENETRATIONS

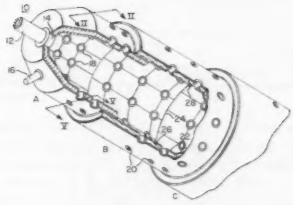
Abe N. Holden, Broomall, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 6, 1973, Ser. No. 377,172
Int. Cl. F02c *1/00*
U.S. Cl. 60—39.65 5 Claims
Group Art Unit 221

References Cited

UNITED STATES PATENTS

2,544,538	3/1951	Mahnken et al.	60/39.69
2,651,912	9/1953	Abbott	60/39.65
2,706,382	4/1955	Logan et al.	60/39.69
2,915,877	12/1959	Darling	60/39.69
3,321,922	5/1967	Latto, Jr.	60/200 A
3,594,109	7/1971	Penny	60/39.65



1. A combustion chamber for a gas turbine engine comprising; an outer cylindrical wall portion forming the outer casing of said combustion chamber, an intermediate generally cylindrical wall portion disposed radially inwardly of and adjacent said outer wall portion, an inner generally cylindrical wall portion disposed radially inwardly of and adjacent said intermediate wall portion, said inner wall portion comprising interlocking members, said interlocking members being stabilized within said chamber by a plurality of inlet air tube-like bushings, said bushings providing air passageways from the outside of said outer casing to the inside of said inner wall portions, said bushings having retaining means for keeping the inner wall portions in close relationship to the intermediate and external wall members, said bushing being constructed from a ceramic material.

B 353,387
APPARATUS FOR ADJUSTING FAN BLADES IN A TURBOJET ENGINE

Wolfgang Pollert, Hochstrasse 24, 8061 Herbertshausen, Germany

Filed Apr. 19, 1973, Ser. No. 353,387
Claims priority, application Germany, Apr. 19, 1972, 2218874
Int. Cl. F02c 3/06; F01d 7/00
U.S. Cl. 60—226 R 16 Claims
Group Art Unit 343

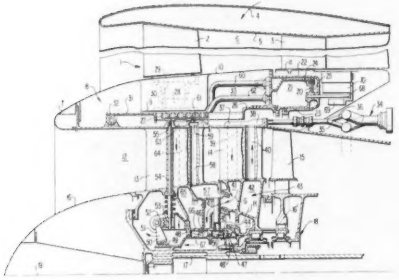
References Cited

UNITED STATES PATENTS

1,085,964	2/1914	Briggs	92/27 X
2,118,890	5/1938	Maes	92/24 X
2,969,118	1/1961	Allen	416/154
3,251,278	5/1966	Royster	92/27 X
3,467,198	9/1969	Ellinger	416/157 X
3,498,187	3/1970	Stringfellow	92/24
3,720,060	3/1973	Pollert	416/157 A

FOREIGN PATENTS OR APPLICATIONS

1,196,588	7/1970	Great Britain	60/226 R
214,726	8/1968	U.S.S.R.	416/158
430,557	6/1935	Great Britain	416/153



1. Apparatus for adjusting fan blades in a turbojet engine of ducted-fan construction of the type which has primary and secondary ducts; said apparatus comprising:

drive system and actuating mechanism means positioned substantially inside of an annulus arranged between said primary and secondary ducts and including a piston connected to toothed rack means mounted for movement within said annulus, said fan blades including blade teeth which matingly engage corresponding rack teeth of said toothed rack means,

selectively engageable arresting means engageable with said toothed rack means to prevent movement of said toothed rack means,

and supporting blade means extending across said primary duct for supporting said annulus, wherein said arresting means includes resiliently biased plunger means extending through cavity means in said supporting blade means, said plunger means being engageable with respective spaced slots in said toothed rack means for arresting said toothed rack means in positions corresponding to predetermined adjusted positions of said fan blades.

B 357,039
EMBEDDED POROUS ELEMENT ROCKET MOTOR

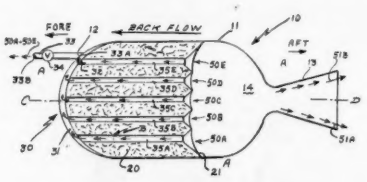
Leonard H. Caveny, 23 Galston Dr., Trenton, N.J. 08691 and Martin Summerfield, 964 Princeton Kingston Rd., Princeton, N.J. 08540

Filed May 3, 1973, Ser. No. 357,039
Int. Cl. F02k 9/04
U.S. Cl. 60—254 3 Claims
Group Art Unit 343

References Cited

UNITED STATES PATENTS

1,015,131	1/1912	Bone et al.	110/97 D
3,182,451	5/1965	Messerly	60/254
3,379,178	4/1968	Boyars et al.	60/39.47



1. An apparatus for controlling the rate of burning of an end-burning solid propellant of a solid propellant rocket motor, wherein said rocket motor is in an atmospheric environment and wherein the rocket motor includes a casing having a fore end and an aft end, and also wherein the rocket motor has an end-burning solid propellant in the casing, a combustion chamber which is disposed aft of the end-burning solid propellant, and a nozzle which is disposed aft of the combustion chamber, and further wherein the end-burning solid propellant has a longitudinal axis, comprising:

a. a plenum chamber disposed in the fore end of the rocket motor casing and forward of the solid propellant, with said plenum chamber having an outlet;

b. a hollow conduit having two ends, with one end connected to the outlet of said plenum chamber, and with the other end exposed to, and within, the atmospheric environment;

c. a valve interposed between the outlet of said plenum chamber and the atmospheric environment, and with said valve connected to said hollow conduit;

d. and, a plurality of high-resistance gas flow paths within the solid propellant, with said gas flow paths connecting the combustion chamber to the plenum chamber, wherein each of the plurality of high-resistance gas flow paths is parallel to the longitudinal axis of the solid propellant, and wherein each of the plurality of high-resistance gas flow paths is also equally spaced from each other, and also wherein each of the plurality of high-resistance gas flow paths includes a porous element which is embedded in the solid propellant, with each said porous element comprising a hollow, thin-walled, cylindrical plastic sheath of small diameter which contains therein a suitable gas flow-restricting, porous, filler material, said filler material being an active packing of reactive material.

B 447,417

VUILLEUMIER REFRIGERATOR WITH SEPARATE PNEUMATICALLY OPERATED COLD DISPLACER

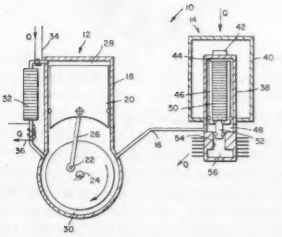
Robert L. Berry, Palos Verdes Peninsula, and Axel G. Dehne, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 1, 1974, Ser. No. 447,417
Int. Cl. F25b 9/00
U.S. Cl. 62—6 3 Claims
Group Art Unit 344

References Cited

UNITED STATES PATENTS

3,078,683	2/1963	Dros	62/6
3,091,092	5/1963	Dros	62/6
3,188,821	6/1965	Chelbs	62/6
3,237,421	3/1966	Gifford	62/6
3,321,926	5/1967	Chellis	62/6
3,431,746	3/1969	Webster	62/6



1. A cryogenic refrigerator comprising;

a cold cylinder having a cold end and having a cold cylinder area, a displacer reciprocably mounted within said cold cylinder and separating said cold cylinder into a cold volume at the cold end of said cold cylinder and a warm volume at the other end thereof, said displacer having a smaller area at said warm volume than said cold volume, a regenerator connected between said warm volume and said cold volume and a pneumatic spring for urging said cold displacer toward both the cold and the warm ends of said cold cylinder, the improvement comprising:

a thermal pulse generator connected to said warm volume of said cold cylinder for providing pressure pulses for causing reciprocation of said cold displacer in said cold cylinder, said thermal pulse generator comprising:

a hot cylinder having a hot end and a warm end, a displacer reciprocapably mounted in said hot cylinder for separating said hot cylinder into a hot volume and a warm volume, said warm volume of said thermal pulse generator being connected to said warm volume of said cold cylinder, a regenerator connected between said hot volume and said warm volume and means for heating the hot end of said hot cylinder, refrigerant gas in said volumes, said refrigerant gas increasing in pressure in all of said volumes as said hot displacer displaces refrigerant gas into said hot volume and decreasing in pressure as said hot displacer displaces gas out of said hot volume into said warm volume.

B 450,546

VEHICLE AIR CONDITIONING CONTROL

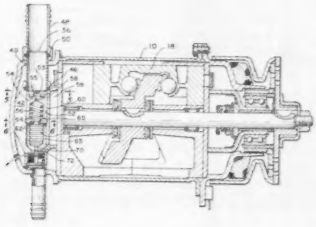
John Henry Heidorn, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 13, 1974, Ser. No. 450,546
Int. Cl. F25b 41/04
U.S. Cl. 62—158 5 Claims
Group Art Unit 344

References Cited

UNITED STATES PATENTS

2,273,535	2/1942	Poe	62/217
3,435,626	4/1969	Wile	62/217
3,525,234	8/1970	Widdowson	62/217
3,564,865	2/1971	Spencer	62/217
3,633,380	1/1972	Pellizzetti	62/217



1. A vehicle air conditioning system including a refrigerant compressor connected in series flow relation with a condenser, expansion means, and an evaporator; said compressor having a housing defining inlet and discharge passages; the system having an improved evaporator control assembly comprising: a valve body member exposed to both inlet and discharge refrigerant fluids in said housing; a throttle valve in said body member regulating flow of inlet fluids to said compressor through a throttle port; said throttle valve being exposed to inlet refrigerant fluids on one side; the other side partially defining a control chamber and being subjected to a control pressure therein; means normally biasing said throttle valve to a compressor closed inlet position; said valve body containing bleed port connecting said chamber with said inlet passage; a control valve in said control chamber movable in response to the pressure therein to open and close said bleed port changing the pressure differential across said throttle valve whereby it moves opening and closing said throttle port maintaining a predetermined desired control pressure in said chamber and in said evaporator preventing freezing of said evaporator during normal conditions; a pressure responsive control valve actuator plunger in said compressor discharge passages sensing refrigerant pressure increases in evaporator loading above the control pressure established by said control valve; an increase in evaporator loading reflected by an increase in compressor discharge pressure moving said plunger opening said control valve and lowering the control pressure in said control chamber; said throttle valve moving opening said throttling passage thereby increasing cooling capacity of the system while the discharge pressure remains above the predetermined control pressure; and electrical control means connected to said control valve being selectively operable to likewise open said control valve providing increased system cooling capacity as desired.

B 316,851

ROTARY HEAT ENGINE POWERED REFRIGERATION APPARATUS

William A. Doerner, Wilmington, Del., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 227,902, Feb. 22, 1972, abandoned. This application Jan. 2, 1973, Ser. No. 316,851

Int. Cl. F25b *3/00*

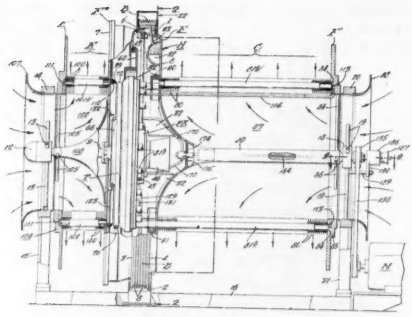
U.S. Cl. 62—499 14 Claims

Group Art Unit 344

References Cited

UNITED STATES PATENTS

2,811,841	11/1957	Grimshaw	62/499



1. Rotary powered cooling and heating apparatus comprising:

a cylindrical housing mounted for rotation about the axis thereof,

rotary power means in said housing including a coaxial rotatable driving member actuated thereby,

a refrigerant compressor rotatably mounted coaxially in the housing and rotationally driven by said driving member at a first predetermined speed operable to compress refrigerant vapor in said housing,

condenser means mounted coaxially adjacent one side of the housing rotatable therewith as a unit and operable to condense compressed refrigerant from said compressor, refrigerant expander means mounted in the housing for expanding the refrigerant condensed in said condenser means,

means for supplying condensed refrigerant to said refrigerant expander,

an evaporator mounted coaxially adjacent the other side of the housing rotatable therewith as a unit and arranged to receive and vaporize refrigerant from said expander,

means for returning vaporized refrigerant from said evaporator to the housing,

transmission means in the housing connected between the driving member and said housing operable to rotationally drive the housing, condenser and evaporator as a unit,

and means cooperable with the transmission means for generating a counter-torque force opposing the reaction torque generated by said transmission means when rotationally driving the housing-condenser-evaporator unit.

B 350,143

FLEXIBLE JAW CLUTCH COUPLING

Harald H. Barth, 103 Hermannstrasse, 663 Neunkirchen/Saar, Germany

Filed Apr. 11, 1973, Ser. No. 350,143

Claims priority, application Luxembourg, June 12, 1972, 65497

Int. Cl. F16d *3/64*

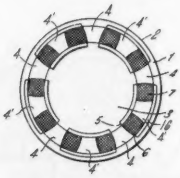
U.S. Cl. 64—14 11 Claims

Group Art Unit 345

References Cited

UNITED STATES PATENTS

2,105,702	1/1938	Scholtze	64/14
2,620,640	12/1952	Bales	64/14
2,716,334	8/1955	Scott et al	64/14
2,891,395	6/1959	Chater	64/14
2,943,464	7/1960	Voges	64/14
3,485,062	12/1969	Blake	64/14



1. A flexible coupling including:

a pair of opposed interengaged coupling halves, each of said pair of opposed coupling halves having:

a. a cylindrical outer housing having an end face;

b. a cylindrical attachment within said outer housing; and

c. a plurality of claws evenly distributed over the circumference of the coupling half and extending beyond the cylindrical housing of the coupling half into the other coupling half;

the end faces of said cylindrical housings being spaced apart in the assembled state of said coupling;

the cylindrical attachment of each coupling half extending toward the other coupling half for an axial distance less than the cylindrical housing of the coupling half;

the flanks of each claw being concave and joining concave radially inwardly and outwardly extending surfaces at the roots of the claw to define a pocket between adjacent teeth in a coupling half to receive teeth from the other coupling half, the pocket having radial extending end portions defined by said radially inwardly and outwardly extending surfaces;

the radial dimension of the pockets between the cylindrical attachment and the outer housing in each coupling half being greater than the radial dimensions of the claws extending into the coupling half from the other coupling half; and

a molded part of elastic material positioned between successive claws from each of the coupling halves, said molded part having shaped pieces with convex sides between opposite concave flanks of successive claws and bridging parts alternately connecting opposite end faces of adjacent shaped parts, said shaped pieces, when not transmitting a load, having a radial dimension less than the radial dimension of the pockets, and said shaped pieces being free to expand radially inward and outward when transmitting a load; and

said radial extending end portions of said pocket providing contact surfaces for said shaped pieces when said coupling halves are radially offset or angle with respect to each other.

B 403,355

AUTOMATIC KELLY BUSHING HOLD-DOWN DEVICE

Don L. Oliver, Houston, Tex., assignor to Cities Service Oil Company, Tulsa, Okla.

Filed Oct. 4, 1973, Ser. No. 403,355

Int. Cl. F16f *3/06*

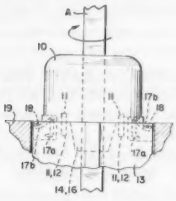
U.S. Cl. 64—23.5 **7 Claims**

Group Art Unit 345

References Cited

UNITED STATES PATENTS

1,496,256	6/1924	Davidson	64/23.5
1,661,285	3/1928	Greve	64/23.5
1,758,426	5/1930	Black	64/23.5
3,386,263	6/1968	Long	64/23.5



6. In a drill rig an automatic apparatus for maintaining a driving connection between a kelly and its rotary table effective to permit rotation of the drill pipe while simultaneously lifting the drill pipe string and bit off the bottom comprising a driven rotary table, a drive bushing keyed to the table, a kelly bushing keyed to but separable from the drive bushing and a plurality of hooks each having a lip carried by the kelly bushing operable to engage mating pins in said drive bushing in response to centrifugal force generated by rotation of the kelly bushing whereby the kelly bushing and the drive bushing are locked or coupled together, said hooks being operable to fall free of said pins in response to gravity when the drill string is at rest.

B 341,579

METHOD AND APPARATUS FOR SHAPE CONTROL OF METAL PRODUCTS IN CONTINUOUS ROLLING MILL

Seiji Fujii; Masamoto Kamata; Masayuki Ishida, and Hiroshi Kuwamoto, all of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha

Filed Mar. 15, 1973, Ser. No. 341,579

Claims priority, application Japan, Mar. 28, 1972, 47-30962

Int. Cl. B21b *37/00*

U.S. Cl. 72—10 **15 Claims**

Group Art Unit 321

References Cited

UNITED STATES PATENTS

3,714,805	2/1973	Stone	72/8
3,727,441	4/1973	Morooka et al.	72/6
3,750,437	8/1973	Fujii et al.	72/12

1. A method of rolling a metal strip by means of a tandem mill including a plurality of spaced apart mill stands comprising:

detecting a size change point of said strip prior to said size change point entering said mill stands,

successively generating pass signals when said size change point of the strip successively passes through respective mill stands,

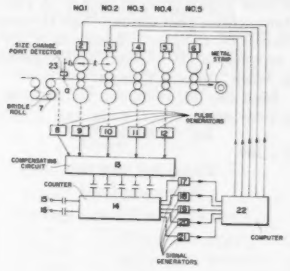
generating control signals in response to said pass signals, and

varying the degree of roll bending of respective mill stands in response to said control signals when said size change point passes through respective mill stands.

2. A control system for a tandem mill including a plurality of spaced apart mill stands through which a metal strip is passed, each mill stand including a respective roll bending device, said control system comprising:

a detector provided on the inlet side of the first mill stand for detecting a size change point on said strip,

a plurality of pulse generators corresponding to and operated by respective mill stands,



a counter responsive to the pulses generated by said respective pulse generators for generating pass signals respectively corresponding to the passing of said size change point through each mill stand, said pass signals being generated responsive to said counter counting to a predetermined count,

a computer responsive to said pass signals for generating respective control signals for respective mill stands, and means coupling said control signals to said roll bending devices of said respective mill stands, said roll bending devices respectively responding to respective control signals for varying the degree of roll bending when said size change point passes through respective mill stands.

B 377,683

STOP COLLAR FOR TUBE EXPANDER

Paul Warren Martin, Springfield, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed July 9, 1973, Ser. No. 377,683

Int. Cl. B21d *3/04, 41/02*

U.S. Cl. 72—122 **8 Claims**

Group Art Unit 321

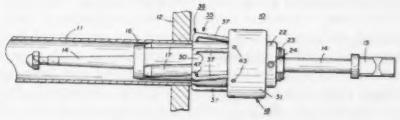
References Cited

UNITED STATES PATENTS

569,651	10/1896	Morrison	72/125
901,271	10/1908	Wiedeke	72/122
2,649,889	8/1953	Dudley	72/125
3,426,565	2/1969	Schott	72/125

FOREIGN PATENTS OR APPLICATIONS

511,113	10/1930	Germany	72/122
536,136	5/1941	Great Britain	72/122



1. In a tube expander including a rotatable tubular cage about which to receive a tube end to be expanded, forming

rollers contained in the outer periphery of said cage and a rotatable tapered mandrel within said cage for driving said cage and rollers in an expanding relation to a tube and received thereon, a substantially non-rotatable stop collar adapted for limiting axial advance of a received tube end onto said cage, said stop collar comprising a plurality of individual means disposed circumferentially about said cage operably independent of each other, said individual means each extending into engagement with the periphery of said cage at a predetermined location in the path of tube advance, and being operably adapted to follow the rotating periphery of said cage rollers and in a surface tracking relation therewith.

B 382,798

DEVICE FOR INSERTING PLUGS IN A PLUG MILL

Louis E. Franceschina; Fred Haromy, both of Sault Ste. Marie, and Frederick W. Kruppert, Goulais River, all of Ontario, Canada, assignors to The Algoma Steel Corporation Limited, Sault Ste. Marie, Ontario, Canada

Filed July 26, 1973, Ser. No. 382,798

Claims priority, application Canada, Aug. 2, 1972, 148540

Int. Cl. B21b *17/10*

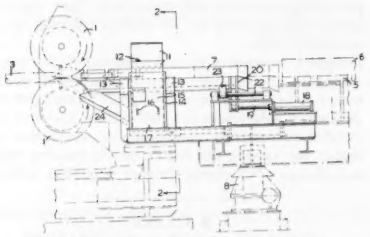
U.S. Cl. 72—209 **11 Claims**

Group Art Unit 321

References Cited

UNITED STATES PATENTS

1,537,206	5/1925	Wikstrom	72/209 X
2,771,800	11/1956	Kritscher	72/209 X
3,277,687	10/1966	Kelly	72/209
3,762,201	10/1973	Schonfeld et al.	72/209



1. In a plug mill for use in reducing the wall thickness of a heated seamless tube to the desired gauge, said plug mill comprising guide means for guiding said heated seamless tube along a defined path in said mill, a pair of rotatable grooved rolling rolls disposed transversely of said path, said rolls in their rolling position providing a first gap therebetween forming a part of said defined path, said first gap being dimensioned such that said rollers grip said tube in said grooves whereby on rotation thereof said tube in said first gap is pulled therethrough, means for rotation of said rolling rolls in said rolling position, retractable means for moving said tube along said defined path into said first gap, a pair of stripper rolls disposed transversely of said path and downstream of said rolling rolls having a second gap therebetween forming part of said defined path adapted in their stripping position to return the seamless tube along said path after rolling thereof by said rolling rolls, a mandrel extending longitudinally of said path securely mounted at one end thereof and having the free end thereof adapted to releasably accommodate a plug member, said mandrel extending through the second gap between the stripper rolls with a plug member, in use, disposed in the first gap between the rolling rolls, the improvement comprising means for removably placing a plug in said first gap on said mandrel, said means comprising an inlet guide member disposed in said defined path upstream of and adjacent said first gap in said rolling rolls, a rotary device having a plurality of open pockets spaced around the periphery thereof, said rotary device being offset from said path and adjacent thereto, said rotary device and said inlet guide member being arranged to permit a plug contained in one of said pockets to be discharged into said inlet guide member, which inlet guide member supports the plug as it is moved along said defined path into the first gap between the rolling rolls and into abutment with the free end of said mandrel, said inlet guide member being adapted to provide a closable third gap adjacent said rolling rolls dimensioned to allow a plug to pass therethrough, means operatively associated with said inlet guide member for closing said third gap during the presence of the plug in said inlet guide member to provide said support of the plug as it is moved into said first gap and for opening said third gap to allow a plug falling from said first gap under gravity subsequent to operation of the rolling rolls to pass through said third gap, and means for guiding the plug passing through said third gap to an unoccupied pocket in said rotary device.

B 373,297

METHOD AND APPARATUS FOR FORMING CUP-SHAPED METAL ARTICLES

Kazunaga Misonoo, Kudamatsu, Japan, assignor to Kozo Yoshizaki, Tokyo, Japan

Filed June 25, 1973, Ser. No. 373,297

Int. Cl. B21d *45/00*

U.S. Cl. 72—345 **5 Claims**

Group Art Unit 321

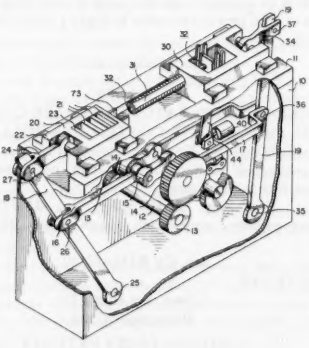
References Cited

UNITED STATES PATENTS

628,043	7/1899	Sperber	72/408
1,967,245	7/1934	Hothersall	72/349
2,800,813	7/1957	Fischer	72/347
2,872,887	2/1959	Praturlon	72/349
3,270,544	9/1966	Maeder et al.	113/120 H

FOREIGN PATENTS OR APPLICATIONS

669,678	4/1952	Great Britain	72/349



1. A method of forming cup-shaped metal articles by means of at least one die and a punch, said method comprising:

positioning a metal blank adjacent said at least one die;

simultaneously moving said punch and said at least one die from spaced apart withdrawn positions thereof toward each other to adjacent forming positions thereof, thereby causing said punch to force said blank through said at least one die and forming said metal article;

simultaneously moving said punch and said at least one die away from each other; and

removing said thus formed metal article from said punch, said step of removing said formed metal article from said punch comprising moving a knockout punch which is

coaxially positioned within said punch longitudinally outwardly of said punch toward said at least one die to a position beyond said forming position of said punch.

4. An apparatus for forming cup-shaped metal articles from a metal blank, said apparatus comprising:

a frame having a slideway surface thereon;

a punch and at least one die mounted to move toward and away from each other on said slideway surface;

means for selectively positioning a metal bland adjacent said at least one die;

means for simultaneously moving said punch and said at least one die from spaced apart withdrawn positions thereof toward each other to adjacent forming positions thereof and for causing said punch to force said metal blank through said at least one die, thereby forming said cup-shaped metal article; and

means for removing the thus formed cup-shaped metal article from said punch, said means for removing comprising a knockout punch coaxially and longitudinally movably positioned within said punch, and means for moving said knockout punch longitudinally outwardly of said punch toward said at least one die to a position beyond said forming position of said punch.

B 364,241

SLIDING AND LOCKING THE FORGING TOOLS ON A FORGING PRESS

Heinz Schmoll, Huckeswagen, and Dieter Jenke, Gruiten, both of Germany, assignors to Schloemann Aktiengesellschaft, Steinstrasse, Germany

Filed May 29, 1973, Ser. No. 364,241

Claims priority, application Germany, May 26, 1972, 2225528

Int. Cl. B21j *13/00*

U.S. Cl. 72—407 **7 Claims**

Group Art Unit 321

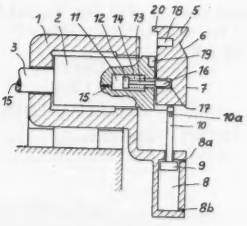
References Cited

UNITED STATES PATENTS

667,187	2/1901	Carstens	10/12 R
1,024,046	4/1912	Weeks	10/12 R
2,245,642	6/1941	Bell et al.	72/447
3,472,058	10/1969	Hautau	72/407
3,477,075	11/1969	Putetti	10/12 R

FOREIGN PATENTS OR APPLICATIONS

1,296,596	6/1969	Germany



1. In a forging press having a press frame, forging piston-cylinder units each having a fixed part mounted on the press frame and a movable part for effecting forging strokes, retraction means for retracting said movable parts, said retraction means comprising constant-pressure retraction ducts for applying hydraulic fluid for retracting said movable part, a forging tool mounted on said movable part, said forging tool defining a plurality of forging zones, the provision of a forging tool moving and locking arrangement comprising means on each said forging tool and said movable part for permitting movement of said forging tool relative to said movable part, in order to position each forging zone in a selected working position, and hydraulic means for locking said forging tools in their respective working positions, said hydraulic means comprising for each said forging zone, at least one engagement member for engaging said forging tool and locking said forging tool, a single-acting locking piston-cylinder unit mechanically connected to said engagement member for actuating said engagement member to engage and lock said forging tool, hydraulic duct means connecting said locking piston-cylinder unit to a constant-pressure retraction duct, and spring means for retracting said engagement member when said locking piston-cylinder unit is not subjected to hydraulic pressure.

B 427,631

APPARATUS FOR STRAIGHTENING AUTOMOBILE FRAMES AND THE LIKE

Walter D. Whitney, San Carlos, Calif., assignor to Whitney Manufacturing Company, San Carlos, Calif.

Filed Dec. 26, 1973, Ser. No. 427,631

Int. Cl. B21d *1/14*

U.S. Cl. 72—461 **9 Claims**

Group Art Unit 321

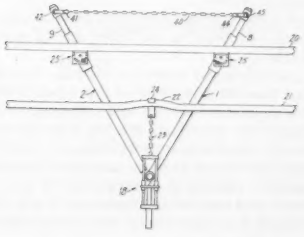
References Cited

UNITED STATES PATENTS

2,371,659	3/1945	Stultz	72/705 X
3,108,629	10/1963	Jenkins	72/705 X
3,276,237	10/1966	Transue	72/295
3,340,720	9/1967	Chartier	72/705 X
3,398,565	8/1968	Whitney	72/705 X
3,492,855	2/1970	Wylie	72/705 X
3,501,938	3/1970	Sprague	72/705 X
3,518,867	7/1970	Rouis	72/705 X
3,691,817	9/1972	Friend et al.	72/705 X

FOREIGN PATENTS OR APPLICATIONS

713,232	9/1966	Italy 72/705



1. A support structure for mounting pulling apparatus for use in straightening automobile frames and the like, comprising:

a base assembly,

said base assembly including a pair of ground supported horizontally disposed elongated legs,

means on said base assembly for pivotally connecting said legs together at one of their corresponding ends for swinging said legs toward and away from each other about a vertical axis,

a vertically disposed post secured at its lower end to said base assembly,

means on said post for securing thereto a pulling device adapted to be connected to a portion of an automobile frame,

abutment means on one of said legs for engaging a portion of an automobile frame for resisting the pull of said pulling device, and

means on the other of said legs for connecting the same to a fixed object.

B 401,133
SCALE TESTER

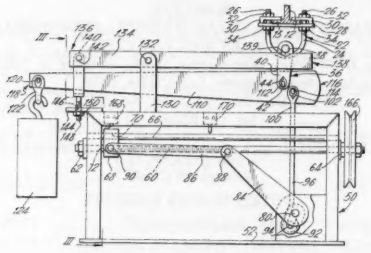
Arthur J. Hebert, 45-45th Ave., Edmundston, New Brunswick, Canada

Filed Sept. 27, 1973, Ser. No. 401,133
Int. Cl. G01l *25/00*
U.S. Cl. 73—1 B **8 Claims**
Group Art Unit 244

References Cited

UNITED STATES PATENTS

1,118,981 12/1914 Wenzelmann ..... 73/1 B



1. Apparatus for testing scales of the type which includes a platform and a weight indicating means connected to said platform which is responsive to a weight supported by said platform, said testing apparatus comprising:

a. a first support means having means thereon connecting the same to said platform;

b. a beam supported by said first support means in a testing position;

c. a base;

d. fulcrum means pivotally connecting said beam to said base at a position along the beam to one side of said first support means;

e. a calibrated weight supported by said beam at a position along said beam to the other side of said first support means;

f. a second support means on said base extending at least in part beneath said beam at a position intermediate said first support means and said calibrated weight; and

g. means for selectively moving said fulcrum means upwardly and downwardly with respect to said base and said platform thereby to move said beam between said testing position wherein it is supported by said first support means and said fulcrum means and a non-testing position wherein it is supported by said second support means and said fulcrum means.

B 351,735
MONITOR FOR DETECTING SURFACTANTS IN LIQUID PETROLEUM PRODUCTS

John D. Jobe, 733 Rutgers, Deer Park, Tex. 77536

Filed Apr. 16, 1973, Ser. No. 351,735
Int. Cl. G01n *13/02*
U.S. Cl. 73—61.1 R **11 Claims**
Group Art Unit 244

References Cited

UNITED STATES PATENTS

2,473,553 6/1949 Stokes 73/64.4

OTHER PUBLICATIONS

Kippenhan, C. et al., A Bubble Growth Experiment for the Determination of Dynamic Surface Tension, In AICh E Jour. 16(2): p. 314–316, Mar. 1970.

1. A monitor for continuously monitoring a liquid hydrocarbon for the presence and/or amount of a surfactant, said monitor comprising:

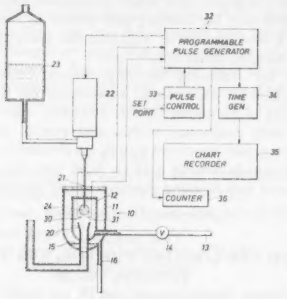
a sample cell;

flow means communicating with said sample cell for supplying a continuous sample of said liquid hydrocarbon to said sample cell at a constant rate;

a tubular probe member, said probe member being mounted so that the lower end of the probe extends below the surface of the liquid in said sample cell;

a source of test liquid;

a metering means, said metering means being coupled to said probe to supply a metered quantity of a test liquid from said source to said probe;



a detecting means disposed in said sample cell to detect when the metered quantity of test liquid drops from the lower end of said probe; and

measuring means coupled to said metering means and said detecting means and disposed to measure the elapsed time between the supplying of the metered quantity of test liquid to the probe and the dropping of the metered quantity from the lower end of the probe.

3. The monitor of claim **1** and in addition a programming means coupled to said measuring means and said metering means to control the supplying of a sample to said probe means.

B 369,563
OIL POLLUTION TOTALIZER

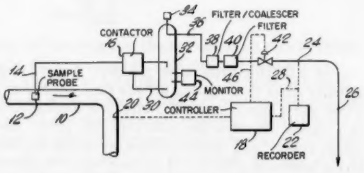
James O. Moreau, 44 Washington Ave., Morris Plains, N.J. 07950, and Richard A. Halko, 53 Biscay Dr., Flanders, N.J. 07936

Filed June 13, 1973, Ser. No. 369,563
Int. Cl. G01f *1/00;* **G01n** *1/20*
U.S. Cl. 73—61.1 R **8 Claims**
Group Art Unit 244

References Cited

UNITED STATES PATENTS

3,627,419 12/1971 Thevenier 356/36
3,638,476 2/1972 Paterson ..... 73/61.1 R



1. A system for determining the rate and total amount of oil discharged in a flowing discharge stream comprising, means

for removing a predetermined sample of said flowing discharge stream; contactor means for intimately mixing said sample with a predetermined volume of solvent; chamber means for receiving and processing the intimately mixed sample and solvent to form a separable first oil-solvent phase and a second phase which is relatively clean; means for recycling the first oil-solvent phase through said contactor means; and outlet means for discharging said relatively clean second phase from said chamber means to an outline line; flow rate control means operably connected in said outline line; and means connected for sensing the relative flow rates of said relatively clean second phase and said flowing discharge stream and controlling said flow rate control means such that the flow rate of said relatively clean second phase is maintained in predetermined direct relation to the flowing discharge stream.

7. The method of claim **6**, including the step of:

f. filtering the second phase of said mixed stream subsequent to removal of the oil-solvent phase therefrom.

B 357,131

ULTRASONIC TESTING OF TUBING EMPLOYING A SPIRAL WAVE GENERATOR

John O. Clark, Pittsburgh; James B. Rafferty, Shaler Twsp., Allegheny County, and Donald G. Schindler, Whitehall Borough, all of Pa., assignors to United States Steel Corporation

Filed May 4, 1973, Ser. No. 357,131
Int. Cl. G01m *29/04*
U.S. Cl. 73—67.8 S **5 Claims**
Group Art Unit 244

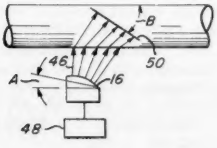
References Cited

UNITED STATES PATENTS

3,183,709	5/1965	Rankin et al.	73/67.9 X
3,218,845	11/1965	Worlton	73/67.8
3,379,051	4/1968	Zeutschel et al.	73/67.9
3,413,843	12/1968	Kortenhoven	73/71.5 U
3,663,842	5/1972	Miller	73/67.8 X

OTHER PUBLICATIONS

J. Rooney et al., Ultrasonic Inspection of Small Diameter Thin-wall Tubing, Ultrasonics, April 1966, p. 57–63.



1. Apparatus for detecting spirally oriented defects in the wall of a tube included an angular range from the longitudinal axis of the tube comprising

a transducer for providing a beam of ultrasonic energy,

a lens coupled to the transducer with a generally convex radiating surface for shaping the beam of ultrasonic energy in a divergent pattern,

means for coupling the divergent ultrasonic beam to the wall of the tube,

said transducer, lens and means for coupling being aligned to generate spirally oriented shear waves in the tube wall when the beam is directed into the tube wall and

means connected to said transducer for detecting reflections of ultrasonic energy back from a defect in the tube wall.

B 382,261

STRAIN GAGE MOUNTING ASSEMBLY

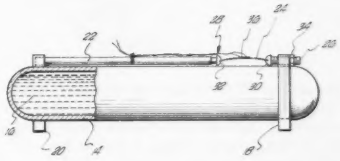
James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by; Robert H. Silver, Los Angeles, Calif., and Sarkis H. Kalfayan, La Canada, Calif.

Filed July 24, 1973, Ser. No. 382,261
Int. Cl. G01b *7/18*
U.S. Cl. 73—88.5 R **13 Claims**
Group Art Unit 244

References Cited

UNITED STATES PATENTS

1,528,627	3/1925	Peters	73/88.5 R X
2,050,106	8/1936	Lurig et al.	73/88.5 R X
2,666,262	1/1954	Ruge	33/148 D
2,722,587	11/1955	Buzzetti et al.	73/88.5 R X
3,009,126	11/1961	Pfann	73/88.5 R X
3,082,621	3/1963	Soderholm	73/88.5 R X



1. A strain gage assembly for measuring strain in an object comprising:

a pair of mounting members capable of being rigidly attached to the object at two separate points on the object; a rigid member mounted on one of the mounting members and extending towards the other mounting member; a resilient strip member removably mounted in compression between the rigid member and the other mounting member;

means mounted on the resilient strip member for measuring strain, and

variable means for providing a predetermined amount of compression strain in the resilient strip member whereby the mounting of the rigid member and the first and second mounting members translates the total strain deformation of the object between the mounting members to the resilient strip member to vary a portion of the compression stress which is measured by means for measuring strain.

B 363,892

TEST FIXTURE FOR DETERMINING STATIC AND DYNAMIC LOADING ON CLUTCH PLATES

Roger Dean Brooks, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 25, 1973, Ser. No. 363,892
Int. Cl. G01m *19/00*
U.S. Cl. 73—118 **8 Claims**
Group Art Unit 244

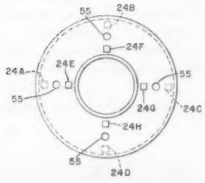
References Cited

UNITED STATES PATENTS

2,044,818	6/1936	Spase	73/118 UX
2,655,809	10/1953	Edens	73/161
2,693,109	11/1954	Gould et al.	73/161
2,992,556	7/1961	Webster	73/141 A
3,087,330	4/1963	Metzmeier	73/140
3,124,770	3/1964	Ciavatta	73/141 A X
3,415,115	12/1968	Newell	73/121

FOREIGN PATENTS OR APPLICATIONS

209,809	9/1968	U.S.S.R.	73/140



1. A test fixture for measuring the pressure exerted by a pressure plate of a clutch pressure plate assembly during stationary and rotational operation comprising:

a. a rotative engaging member;

b. means for selectively rotating said engaging member;

c. means for connecting said pressure plate assembly to said engaging member for rotation therewith;

d. sensing means for sensing pressure between said pressure plate and said engaging member and providing a signal proportional thereto and inserted between said pressure plate and said engaging member for rotation therewith.

B 407,736

APPARATUS FOR TESTING EARTH FORMATIONS COMPOSED OF PARTICLES OF VARIOUS SIZES

Harold J. Urbanosky, Pearland, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Oct. 18, 1973, Ser. No. 407,736
Int. Cl. E21b *49/00*
U.S. Cl. 73—155 **29 Claims**
Group Art Unit 244

References Cited

UNITED STATES PATENTS

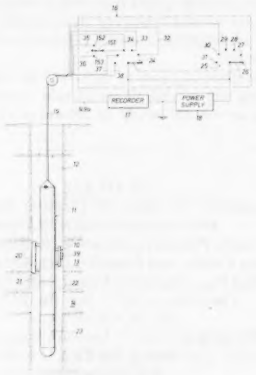
3,254,531	6/1966	Briggs, Jr.	73/155
3,677,080	7/1972	Hallmark	73/155

1. Formation-testing apparatus adapted for suspension in a borehole having mudcake lining the walls thereof adjacent to earth formations containing producible connate fluids and comprising:

a body having a fluid passage adapted to receive connate fluids;

fluid-admitting means on said body including a fluid entry adapted to be engaged with a borehole wall for isolating a surface thereof from borehole fluids;

means selectively operable for positioning said fluid-admitting means against a borehole wall to place said fluid entry into communication with earth formations beyond an isolated borehole wall surface; and



selectively-positionable fluid-filtering means cooperatively arranged in fluid communication between said fluid passage and said fluid entry and operatively movable upon engagement of said fluid-admitting means with an isolated borehole wall surface to one filtering position for initially passing mudcake particles displaced from an isolated borehole wall surface on through said filtering means into said fluid passage and operatively movable toward another filtering position whenever loose formation particles are eroded from an isolated borehole wall surface for collecting such loosened formation particles in said fluid entry as connate fluids pass on through said filtering means into said fluid passage.

B 405,360

TEMPERATURE MEASUREMENT WITH THREE-LEAD RESISTANCE THERMOMETERS BY DUAL CONSTANT CURRENT METHOD

Samuel A. Arcara, North Wales, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Oct. 11, 1973, Ser. No. 405,360
Int. Cl. G01k *7/24*; **H04b** *3/10*
U.S. Cl. 73—362 AR **10 Claims**
Group Art Unit 244

References Cited

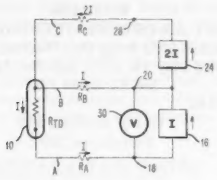
UNITED STATES PATENTS

3,457,493	7/1969	Shoemaker et al.	307/60 X

1. A system for measuring a voltage change indicative of the temperature change detected by a three-lead resistance thermometer having three leads including potential leads connected to opposite ends of the resistance thermometer element and a current lead connected to one of said ends, comprising:

means for producing constant currents in said element, said potential leads and said current lead such that current of a certain magnitude flows through said element and each of said potential leads and a current of twice said certain

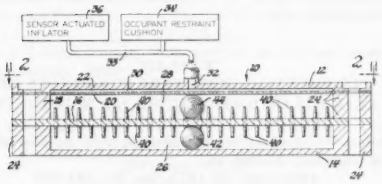
magnitude flows through said current lead with the current through each of said potential leads being in the same direction with respect to said element, and



voltage measuring means connected between said potential leads to measure the voltage change.

B 305,868
COLLISION RECORDER
Samuel B. Robbins, Rochester, Minn., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 13, 1972, Ser. No. 305,868
Int. Cl. G01p *15/04*
U.S. Cl. 73—492 **6 Claims**
Group Art Unit 244
References Cited
UNITED STATES PATENTS

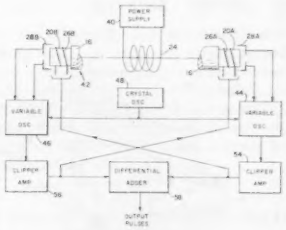
3,238,870	11/1965	Baker	73/492
3,312,188	4/1967	Lude et al.	116/114 AH
3,373,716	3/1968	Williams	116/114 AH
3,707,722	12/1972	Itoh	346/7



2. A collision recorder for an occupant restraint system, said collision recorder comprising, a planar member, a plurality of spaced frangible means carried by the planar member, an inertia mass movable on the planar member and surrounded by the plurality of frangible means, the inertia mass moving and breaking the frangible means when subjected to a predetermined deceleration force, and means for capturing the inertia mass upon actuation of the occupant restraint system.

B 385,210
DIGITAL PULSE REBALANCE ACCELEROMETER
James V. Johnston, Madison, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Filed Aug. 2, 1973, Ser. No. 385,210
Int. Cl. G01p *15/08*
U.S. Cl. 73—516 R **2 Claims**
Group Art Unit 244
References Cited
UNITED STATES PATENTS

2,591,921	4/1952	Cosgriff et al.	73/516 R
2,869,851	1/1959	Sedgfield et al.	73/517 B
3,068,704	12/1962	Parker	73/516 R
3,109,310	11/1963	Slater	73/516 R
3,111,036	11/1963	Kistler	73/517 B
3,132,520	5/1964	Wing	73/516 R X
3,175,404	3/1965	Entin	73/516 R
3,558,946	1/1971	Cory	73/516 R X
3,702,073	11/1972	Jacobs	73/517 B



1. A digital pulse rebalance accelerometer for measuring acceleration of a body and comprising: a housing assembly having an elongated inner cylindrical chamber, a primary motor winding disposed around a portion of the inner wall of the chamber for developing a rotational electromagnetic field across said chamber, rotor means having a longitudinal axis coaxial with said chamber and disposed within said chamber for unencumbered rotation and translation, an air gap encompassing said rotor for isolating said rotor from surrounding housing structure, a hysteresis motor ring disposed around a central portion of said rotor and disposed within the plane of said rotational electromagnetic field for rotating said rotor, first and second split cup, capacitive, pick-offs encompassing respective first and second end portions of said rotor for responding to changes in capacitance at respective rotor ends, first and second torque coils adjacent respective pick-offs and disposed around the inner annular surface of the chamber encompassing a portion of said rotor for coupling electromagnetic energy to respective ends of said rotor, said rotor being constrained only by the hydrodynamic air gap and electromagnetic forces, said rotor ends having, respectively, a magnetic metal ring forming the terminal end portion for changing the capacitance of said split cups in response to longitudinal motion of the rotor and for providing motor restoration forces in response to electromagnetic energy coupled through said torque coils, a power supply for activating said primary motor winding and thereby imparting rotation to the rotor, differential means coupled to said first and second capacitance pick-off cups for providing differential output pulses in proportion to change in capacitance at the rotor ends indicative of changes in velocity of the housing assembly, a first oscillator and clipper amplifier serially connected between said first capacitive cups and said differential means, a second oscillator and clipper amplifier serially connected between said second capacitive cups and said differential means; and

wherein said first clipper amplifier has an output coupled to said second torque coil for coupling electromagnetic energy thereto, and said second amplifier has an output coupled to said first torque coil for coupling energy pulses thereto.

B 358,244
MULTISPEED POWER TRANSMISSION WITH PLURAL COUNTERSHAFTS

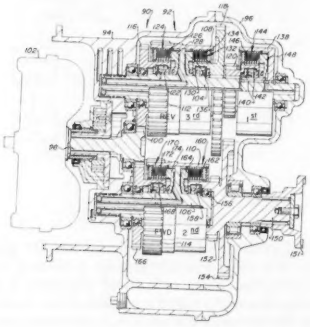
James J. Jameson, Coffeyville, Kans., assignor to Gardner-Denver Company, Quincy, Ill.

Filed May 7, 1973, Ser. No. 358,244
Int. Cl. F16h *3/08*
U.S. Cl. 74—360 **6 Claims**
Group Art Unit 345

References Cited

UNITED STATES PATENTS

2,511,039	6/1950	Black et al.	74/359 X
3,050,164	8/1962	Bowen et al.	74/360 X
3,064,488	11/1962	Lee et al.	74/331 X
3,138,965	6/1964	Brey et al.	74/331
3,465,609	9/1969	Fisher et al.	74/360
3,555,920	1/1971	Merritt	74/356
R25,458	10/1963	Barth et al.	74/360 X



6. A multispeed constant mesh gear transmission comprising:

a housing;

an input shaft having an input gear mounted thereon;

a first countershaft having a first gear rotatably mounted thereon and in constant mesh with said input gear, and a first clutch for connecting said first gear for rotation with said first countershaft;

a second countershaft parallel to said first countershaft and having a second gear rotatably mounted thereon and in constant mesh with said input gear, and a second clutch for connecting said second gear for rotation with said second countershaft;

third and fourth gears fixed respectively to said first and second countershafts and meshed one with the other;

a fifth gear mounted for rotation on said second countershaft and a third clutch for connecting said fifth gear to said second countershaft;

a sixth gear mounted for rotation on said first countershaft and a fourth clutch for connecting said sixth gear to said first countershaft, said sixth gear being in mesh with a seventh gear fixed for rotation with said fifth gear;

an eighth gear mounted for rotation on said second countershaft and a fifth clutch for connecting said eighth gear to said second countershaft;

a ninth gear mounted for rotation on said first countershaft and a sixth clutch for connecting said ninth gear to said first countershaft, said ninth gear being in mesh with a tenth gear fixed for rotation with said eighth gear; and,

an output shaft including first gear means fixed thereon and in mesh with said fifth gear and second gear means fixed on said output shaft and meshed with said eighth gear.

B 360,296
ENERGY ABSORBING STEERING COLUMN

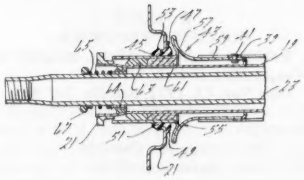
Robert J. Smith, 11552 Irene Dr., Warren, Mich. 48093

Filed May 14, 1973, Ser. No. 360,296
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 **4 Claims**
Group Art Unit 345

References Cited

UNITED STATES PATENTS

3,143,321	8/1964	McGehee et al.	188/1 C X
3,236,333	2/1966	Mitchell	188/1 C
3,339,674	9/1967	Kroell et al.	188/1 C
3,528,530	9/1970	Franck et al.	188/1 C
3,538,785	11/1970	Grancon	74/492
3,608,677	9/1971	Wykes	188/1 C
3,717,046	2/1973	Takao et al.	74/492
3,747,427	7/1973	Milton	74/492
3,760,650	9/1973	Pardy	74/492
3,779,591	12/1973	Rands	188/1 C



1. A die device for a tubular energy absorbing steering column jacket comprising a movable die means connected to a floorboard of a vehicle and movable with respect thereto, said die means moving toward said floorboard when a force of a predetermined magnitude is applied to the upper end thereof, said die means comprising a tubular member having a forward tubular portion and a rearward tubular portion, and a curved die portion between said tubular portions, said die portion being formed by the wall of said tubular member being folded upon itself.

B 293,437
DIFFERENTIAL STRUCTURE FOR PREVENTING LEAKAGE OF DIFFERENTIAL LOCK ACTUATING FLUID TO THE DIFFERENTIAL HOUSING

Thomas William Freiburger, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Sept. 29, 1972, Ser. No. 293,437
Int. Cl. F16h *1/38*
U.S. Cl. 74—710.5 **5 Claims**
Group Art Unit 342

References Cited

UNITED STATES PATENTS

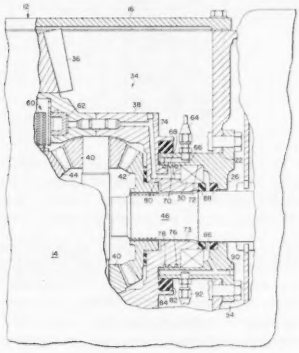
3,089,349	5/1963	Thornton	74/710.5
3,383,950	5/1968	Kerschner	74/710.5

FOREIGN PATENTS OR APPLICATIONS

596,091	7/1959	Italy	74/710.5

1. In a combination including a fixed housing defining a fluid cavity in the lower portion thereof for holding an optimum level of fluid, drivable means rotatably mounted in said housing and including a portion which, during rotation, traces

a path passing through the fluid cavity below the optimum level of fluid, a fluid manifold member being located in the housing and defining a first cylindrical mounting surface formed about a fixed axis, said drivable means including a second cylindrical mounting surface disposed in sliding engagement with said first cylindrical mounting surface and thus forming an interface between the drivable means and the manifold member, said drivable means further including a fluid pressure actuatable element, a fluid pressure inlet passage means being connected to the element and including first and second fluid passages located respectively in said drivable means and said manifold member and being joined in fluid communication at a location at said interface, and first and



second sealing rings respectively located at the interface at the opposite sides of said location for preventing a substantial amount of the pressure fluid leakage which would occur along said interface in the absence of the sealing rings, the improvement comprising: zero-leak sealing means located for blocking the flow of any fluid leaking past the first and second sealing rings from reaching the fluid-holding cavity of the housing; and drain passage means located in said manifold member and being in fluid communication with said interface at locations at the opposite sides of the sealing rings from the location at which said first and second fluid passages are in fluid communication with each other for draining fluid leaking past the first and second rings.

B 294,579

APPARATUS FOR MANUFACTURING A BELLOWS SEALS

Henry J. Libicki, Lorain, Ohio, assignor to Nordson Corporation, Amherst, Ohio

Filed Oct. 3, 1972, Ser. No. 294,579
Int. Cl. B23b *3/28*
U.S. Cl. 82—11 **7 Claims**
Group Art Unit 321

References Cited

UNITED STATES PATENTS

1,926,628	9/1933	Morehouse	29/454 UX
2,175,596	10/1939	Erling	83/54 X
2,304,828	12/1942	Joy	82/98
3,381,361	5/1968	DeCuissart et al.	29/454 X
3,465,641	9/1969	Allison	83/917 X

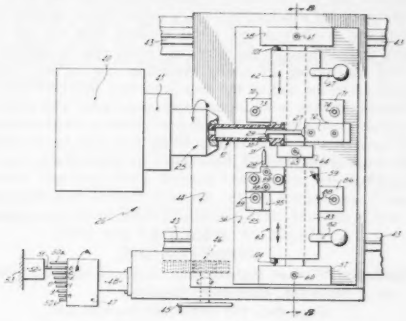
FOREIGN PATENTS OR APPLICATIONS

820,544	9/1959	Great Britain	29/454

1. Apparatus for manufacturing a thin walled flexible bellows having multiple convolutions along the axial length of said bellows, said apparatus comprising

means for rotating a tubular workpiece blank having an inside wall surface and an outside wall surface,

cutting means for sequentially machining a first generally V-shaped groove into one of said surfaces of said tubular blank and a second generally V-shaped groove into the other of said surfaces, said grooves being axially spaced a distance equal to approximately one half the pitch of said convolutions, and



stop means for repeatedly and sequentially repositioning said cutting means at distances axially spaced through increments of one pitch diameter of said convolutions so as to enable said cutting means to alternately and sequentially machine V-shaped grooves throughout the axial length of said multiple convolutions, said stop means including a rotatable drum having varying length stop means mounted thereon.

B 305,597

MACHINE FOR FORMING PISTONS OF ELLIPTICAL CROSS SECTION

Frank C. Skrentner, Bloomfield Hills, Mich., assignor to Jos. F. Lamb, Company, Warren, Mich.

Filed Nov. 10, 1972, Ser. No. 305,597
Int. Cl. B23b *5/24*
U.S. Cl. 82—19 **4 Claims**
Group Art Unit 324

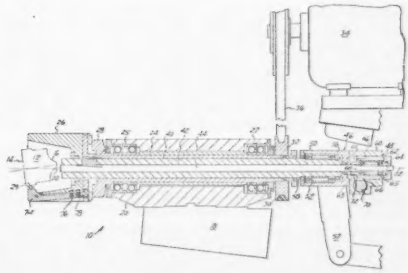
References Cited

UNITED STATES PATENTS

2,720,806	10/1955	Stewert	82/18 X
2,924,135	2/1960	Pucci	82/19
3,391,587	7/1968	Kieboom	82/19

FOREIGN PATENTS OR APPLICATIONS

443,846	2/1968	Switzerland	82/20

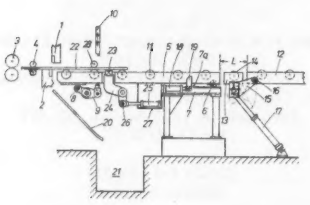


1. In a metal turning machine of the type having a rotatable spindle, a head mounted on said spindle for rotation therewith about the rotary axis of the spindle, a tool supporting member, means for mounting a cutting tool on said tool supporting member, said tool supporting member being movably mounted on said head to permit the tool supported thereby to

move in a direction radially of said head, an axially shiftable draw bar in said spindle and rotatable therewith, cooperating cam and cam follower means operably interconnecting said tool supporting member and said draw bar such that in response to axial movement of the draw bar relative to the spindle said tool is caused to move radially of said head, that improvement which comprises, a second draw bar concentric with and axially slideable within the first draw bar and rotatable therewith about the rotary axis of the spindle, said second draw bar having an axially extending cam surface thereon inclined to the axis of the first draw bar, said cam and cam follower means being operatively associated with said cam surface to shift the tool radially in response to axial movement of the second draw bar relative to the first draw bar and means for shifting the second draw bar axially relative to the first draw bar.

B 425,539
SHEET CUTTING
Oskar Karl Biernot, Ingbert/Saar, Germany, assignor to Moeller & Neumann, Ensheimer, Germany
Filed Dec. 17, 1973, Ser. No. 425,539
Int. Cl. B26d 7/16
U.S. Cl. 83—27 **5 Claims**
Group Art Unit 324
References Cited
UNITED STATES PATENTS

3,600,992	8/1971	Dryon	83/251 X

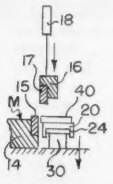


1. A method of cutting a sheet into sections of predetermined length, comprising advancing the sheet longitudinally between cross cutting shears until and actual length of sheet not greater than said predetermined length is located downstream of said shears and rests on a longitudinally displaceable tilting table, automatically comparing said predetermined and actual lengths to produce an error signal in the event of the actual length being less than the predetermined length, and, on occurrence of an error signal, clamping the sheet on the tilting table and displacing the tilting table longitudinally away from the cross cutting shears until the actual length coincides with the predetermined length whereupon the shears are operated to cut the section of predetermined length from the sheet.

2. Apparatus for cutting a sheet into sections of predetermined length, comprising a pair of cross cutting shears, a longitudinally displaceable tilting table downstream of said shears, a bed of driven rollers on said table, drive means for advancing said sheet between said shears and onto said table in a first feed step, means for measuring the actual length of sheet extending downstream of the shears after said first feed step, comparison means for comparing the measured actual length with said predetermined length, clamping means for clamping the sheet onto said table in the event of an error signal from said comparison means, and drive means for displacing the table longitudinally so as to perform a second feed step of the sheet after which said actual length coincides with the predetermined length.

B 389,327
SHEARING APPARATUS
Albert L. Kurtz, Gates Mills, Ohio, assignor to The Hill Acme Company, Cleveland, Ohio
Filed Aug. 17, 1973, Ser. No. 389,327
Int. Cl. B26d 1/00
U.S. Cl. 83—568 **1 Claim**
Group Art Unit 324
References Cited
UNITED STATES PATENTS

3,757,621	9/1973	Breetvelt	83/694 X



1. A shearing machine for shearing an associated planar workpiece with relatively low power and without attendant curling of the workpiece comprising, a stationary frame, a stationary knife mounted on said frame, a movable knife, movable knife support means mounting said movable knife for movement toward and away from said stationary knife in coacting shearing relation therewith, a workpiece outboard support anvil disposed adjacent said stationary knife and directly below said movable knife in opposition thereto, and leaf-spring type anvil mounting means on said frame for yieldably supporting said anvil, said mounting means effecting a constant even yield resistance for the anvil as an associated workpiece is sheared thereon by said movable knife in coaction with the stationary knife, said anvil mounting means including an elongated base mounted on said frame, said base having spaced raised ridges on its upper surface, and an elongated leaf-spring supported at its ends on said ridges respectively, said anvil being disposed on said spring intermediate its ends and providing two-dimensional yield of the anvil thereby effecting a progressively diminishing rake angle as the workpiece is sheared and providing a constant yield resistance.

B 387,039
PROCESS FOR THE PRODUCTION OF EXPLOSIVE DEVICES SURROUNDED BY A CASE
Manfred Strunk, Neuenrade; Heinz Kroschel, Troisdorf-Sieglar, and Alfred Voss, Cologne, all of Germany, assignors to Dynamit Nobel Aktiengesellschaft
Filed Aug. 9, 1973, Ser. No. 387,039
Claims priority, application Germany, Aug. 10, 1972, 2239281
Int. Cl. C06b 21/02
U.S. Cl. 86—1 R **14 Claims**
Group Art Unit 221
References Cited
UNITED STATES PATENTS

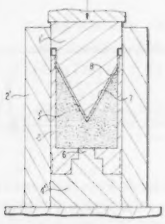
2,888,715	6/1959	Frank	264/120 X
3,027,838	4/1962	Meddick	102/24 HC
3,034,393	5/1962	Lieberman et al.	102/24 HC
3,255,659	6/1966	Venghiattis	102/24 HC
3,736,875	6/1973	Bucklishch	102/24 HC

FOREIGN PATENTS OR APPLICATIONS

852,217	10/1952	Germany	425/DIG. 123

1. Process for the production of explosive devices surrounded by a case comprising the steps of placing an explosive

charge in a matrix mold, moving a pressing tool in a first direction within the mold to apply a force to the explosive charge to compress the charge and form an explosive device of a predetermined shape with mutually opposite end portions, the pressing tool during the movement thereof applying the force to one of the mutually opposite end portions, placing the explosive device within a case having an open end such



that the other mutually opposite end portion of the explosive device is arranged proximate thereto, and moving a pressing tool to apply a force to the other mutually opposite end portion of the explosive body within the case such that in the two pressing operations, a pressing tool is effective on the mutually opposite end portions of the explosive device to provide the explosive device with a uniform density.

B 439,669

AMMUNITION COOK-OFF SENSING AND PREVENTION SYSTEM

Willard R. Ginsky, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed Feb. 4, 1974, Ser. No. 439,669
Int. Cl. F41d *11/20*
U.S. Cl. 89—12 **6 Claims**
Group Art Unit 221

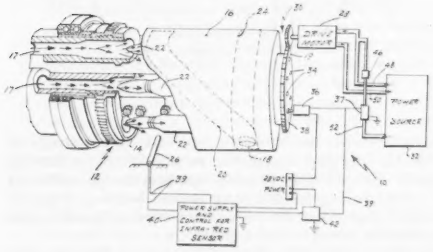
References Cited

UNITED STATES PATENTS

2,471,806	5/1949	Wilson et al.	89/14 A
3,618,455	11/1971	Plumer et al.	89/14 A

FOREIGN PATENTS OR APPLICATIONS

710,250	6/1954	Great Britain	89/14 A



1. An ammunition cook-off sensing and prevention system adapted for use with an automatic weapon having a plurality of barrels circumferentially arranged about a common axis, a rotor assembly supporting said barrels and a housing circumferentially spaced about and rotatably supporting said rotor assembly, said system comprising drive means for rotating said rotor assembly, means for supplying power to said drive means operably connected thereto, means mounted in a predetermined position adjacent said rotor assembly for sensing the heat emanating from an ammunition round carried by said rotor assembly, said sensing means being operably connected to said power supplying means and regulating means operably connected between said sensing means and said power supplying means for controlling the amount of power supplied to said drive means whereby said rotor assembly is rotated by said drive means when the heat emanating from an ammunition round is deemed to be above a predetermined temperature by said sensing means.

B 384,658

REMOTELY MOVABLE PLATFORM

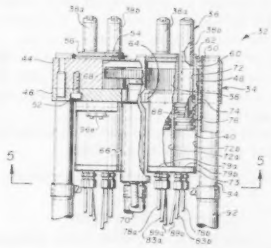
Charles Theodore Ward; Donald Lee Mathis; Frank Taylor Radcliff, and Richard Vorwerk, all of Chattanooga, Tenn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 1, 1973, Ser. No. 384,658
Int. Cl. F15b *11/00*
U.S. Cl. 91—411 R **18 Claims**
Group Art Unit 341

References Cited

UNITED STATES PATENTS

1,262,341	4/1918	Hilliard	180/1 VS
2,104,062	1/1938	Temple	114/222
3,507,352	4/1970	Williamson	91/411 R
3,609,612	9/1971	Tibbling	114/222
3,688,798	9/1972	Nightingale	251/189
3,777,834	12/1973	Hiraoka	180/1 VS



1. A carriage for remotely controlled travel laterally of the surface of a member, comprising:

a. a base;

b. a stepping mechanism connected to said base including at least two anchor means each selectively engagable and disengagable with said member for resisting lateral motion relative thereto and at least one anchor means being translatable relative to said base parallel said base;

c. means for supporting said base proximate said surface of said member substantially parallel therewith to allow said engagement and disengagement of said anchor means with said member;

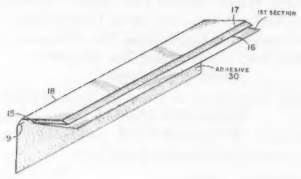
d. first remotely actuable means for selectively engaging and disengaging each said anchor means with said member;

e. second remotely actuable means for translating said at least one anchor means relative to said base in a direction parallel the plane of said member; and

f. means for controlling actuation of first and second remotely actuable means, whereby said relative translation between said at least one anchor means and said base acts to advance said base laterally relative to said member when said at least one anchor means is engaging said member.

B 379,282
METHOD OF CONSTRUCTING A BOX CLIP
Olin B. Sparks, 8834 Birdwood Road, Houston, Tex. 77036
Filed July 16, 1973, Ser. No. 379,282
Int. Cl. B31d *1/02*
U.S. Cl. 93—1 E **2 Claims**
Group Art Unit 325
References Cited
UNITED STATES PATENTS

2,774,124	12/1956	Brady	40/23 R X
3,098,272	7/1963	Frye	24/67 R
3,557,475	1/1971	Verguson	40/23 R X

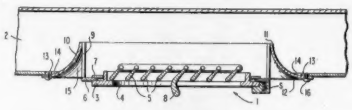


1. A method of constructing box clips from a substantially rectangular, pliable member, comprising:
   a. dividing the member longitudinally into six parallel sections;
   b. forming a first fold on the line between the first and the second sections;
   c. installing a plurality of spaced-apart spring clips along the edge of said first fold;
   d. covering the sixth section with an adhesive;
   e. forming a second fold along the line between said second and third sections near the inner ends of said spring clips;
   f. forming a third fold along the line between said fourth and fifth sections; and
   g. adhering said first section to said sixth section to thereby enclose said spring clips by said folds.

B 261,378
AIR DISTRIBUTOR
Willi Kramer, Waiblingen, and Hans-Peter Schanzer, Stuttgart, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed June 9, 1972, Ser. No. 261,378
Claims priority, application Germany, June 11, 1971, 2128987
Int. Cl. B60h *1/26*
U.S. Cl. 98—2.15 **10 Claims**
Group Art Unit 344
References Cited
UNITED STATES PATENTS

1,718,380	6/1929	Roberts	98/2.05
2,155,355	4/1939	Booth	98/2.08
2,936,693	5/1960	Sweedyk	98/110 X
3,138,085	6/1964	Mitchell	98/40 A
3,276,347	10/1966	Atkinson et al	98/121 R X
3,572,233	3/1971	Bar et al	98/40 VM
3,636,854	1/1972	Cary	98/110

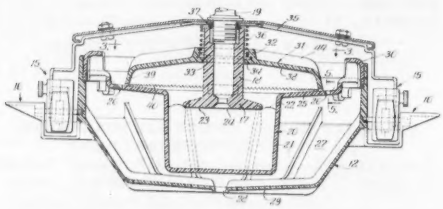
1. An air distributor at an air channel for heating, ventilating an air conditioning systems in vehicles, with a circular disk means provided with an air passage and rotatably supported at a support plate means, said circular disk means carrying slats pivotally adjustable about their respective longitudinal axis, one of said slats being provided with a handle to enable the circular disk means as well as the slats to pivot independently of one another, characterized in that the support plate means is connected by way of a web means with an annular flange means whose inner edge projects into the air channel and whose outer flange-like end portion serves for the fastening of the air distributor structure at the edge of an aperture provided in the air channel, the annular flange means includes a wall portion between the inner edge and the outer flange-like end portion, the wall portion extending into the air channel, the web means extends from the support plate means into the air channel for connecting a peripheral portion of the support plate means with the inner edge of the annular flange means and in that air slot means are defined between the wall portion of the annular flange, said support plate means and said web means for directing at least a portion of the distributed air in a predetermined direction parallel to the exterior of said air channel.



KJA

B 359,187
BEVERAGE CHAMBER FILTER
Charles J. Vitous, Berwyn, Ill., assignor to Cory Corporation
Filed May 10, 1973, Ser. No. 359,187
Int. Cl. A47j *31/00*
U.S. Cl. 99—303 **20 Claims**
Group Art Unit 242
References Cited
UNITED STATES PATENTS

2,558,521	6/1951	Karlen	99/303
2,618,218	11/1952	Peters	99/303
3,793,935	2/1974	Martin	99/295



1. In a brewer for brewing a beverage from a charge of particulate brewing ingredients, means defining a brewing chamber for holding the brewing ingredient charge and having an outlet opening for delivering brewed beverage from the chamber, and means for introducing brewing liquid to said chamber for acting on a charge therein,
   means for controlling flow of the brewed beverage outwardly through said outlet opening comprising an impermeable wall element extending across said outlet opening and having a peripheral edge portion engaging said brewing chamber means about said outlet opening and defining therewith a plurality of small flow passages having a size preselected for passing the brewed beverage outwardly therethrough while effectively preventing passage of particulate charge material therethrough.

B 406,357

TORSION BAR FLOATING SQUEEGEE MOUNT FOR SCREEN PRINTER

Russell W. Atkinson, Prospect Hill, 4-3B, Flemington, N.J. 08822

Continuation-in-part of Ser. No. 188,946, Oct. 13, 1971, abandoned. This application Oct. 15, 1973, Ser. No. 406,357

Int. Cl. B41f *15/42*

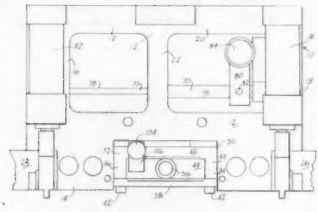
U.S. Cl. 101—123 **9 Claims**

Group Art Unit 337

References Cited

UNITED STATES PATENTS

2,231,535	2/1941	Jackson et al.	101/115
2,556,657	6/1951	Martin	101/124
3,078,792	2/1963	Kerstan	101/124 X
3,109,365	11/1963	Karlyn	101/124
3,277,816	10/1966	Olsen	101/115 X
3,290,236	12/1966	Mayer	101/114 X
3,483,819	12/1969	Hughes, Jr.	101/123
3,543,679	12/1970	Wahl	101/35
3,592,132	7/1971	Weber	101/119



1. A squeegee head for horizontal movement over a horizontal printing screen covering a substrate to move a squeegee, in engagement with said screen over said screen to perform a screen printing operation comprising:

a frame;

a squeegee support connected with said frame and vertically slidable with respect to said frame;

a squeegee below, and connected with, said squeegee support;

an elongated torsion bar connected with said frame;

a link fixedly secured at one end to said torsion bar and connected at its other end with said squeegee support;

first rotating means to rotate said torsion bar;

said first rotating means spaced from said link along the longitudinal axis of said torsion bar and connected with said torsion bar so that when said first rotating means is actuated said torsion bar rotates to pivot said link about the axis of said torsion bar so that said other end of said link moves downward to move said squeegee support and said squeegee downward, said torsion bar at the portion thereof extending between said link and said first rotating means being of a cross-sectional area small enough to permit considerable torsional angular deflection in said torsion bar between a cross-sectional plane of said torsion bar adjacent to said rotating means and a cross sectional plane of said torsion bar adjacent to said link when said other end of said link is acted on by an upward force of a value typical of the force between said squeegee and said screen during a printing operation whereby, said squeegee and squeegee support can resiliently, and with substantially uniform pressure follow any irregulaities in said substrate, and;

torque regulating means connected with one of said link and said means to rotate said torsion bar to change the angularity of a cross sectional plane of said torsion bar adjacent to said regulating means;

whereby said first rotating means can rotate said torsion bar to lower said squeegee to a height where it will engage said printing screen during said printing operation and said torque regulating means can be actuated to control the torsional angular deflection in said torsion bar between said first means to rotate said torsion bar and said link and thereby control said substantially uniform pressure when said squeegee is at said height.

B 351,939

DEVICE FOR LOCKING UP FLEXIBLE PRINTING PLATES ON FORME CYLINDERS OF PRINTING PRESS

Bertram Wilhelm-Georg Dauner; Helmut Hermann Marx, both of Wirzburg, and Karl-Heinz Arno Wolfram, Eibelstadt, all of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Germany

Filed Apr. 17, 1973, Ser. No. 351,939

Claims priority, application Germany, May 23, 1972, 2225016

Int. Cl. B41f *27/02*

U.S. Cl. 101—415.1 **3 Claims**

Group Art Unit 337

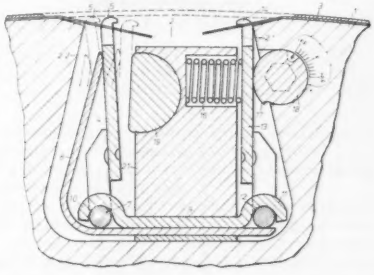
References Cited

UNITED STATES PATENTS

2,708,875	5/1955	Harless	101/378
2,768,578	10/1956	Park et al.	101/415.1
2,768,579	10/1956	Fies	101/415.1
3,019,728	2/1962	Wenczler	101/378
3,095,811	7/1963	Peabody et al.	101/415.1
3,107,609	10/1963	Haramija	101/378
3,335,663	8/1967	Harenza	101/415.1
3,603,255	9/1971	Harner	101/415.1
3,625,151	12/1971	Hart	101/415.1
3,626,848	12/1971	Tafel	101/415.1
3,757,691	9/1973	Etchell	101/387

FOREIGN PATENTS OR APPLICATIONS

1,200,991	8/1970	Great Britain	101/378
1,231,188	5/1971	Great Britain	101/415.1
1,263,021	3/1968	Germany	101/378
52,380	12/1966	Germany	101/415.1
53,708	2/1967	Germany	101/415.1



1. A device for detachably holding flexible printing plates on forme cylinders of printing presses, said device comprising in combination:

a forme cylinder having an axially extending groove in its periphery;

a first locking plate rotatably positioned in said groove, said first locking plate extending substantially the width of said printing plate, said first locking plate having an axially extending hinge portion at its lower end and hook portions on its upper end, said hook portions being receivable in apertures in a first end of said printing plate;

a hold down bar secured in said groove;

a first cam means rotatably carried in an axially extending recess in said hold down bar, said first cam means and said hold down bar extending substantially the length of said groove, said first cam means having wrench receiving means on an end thereof for rotating said first cam means

to cause said first cam means to press against a first side of said first locking plate throughout its length;

a leaf spring having a transversely extending bottom end positioned in said groove beneath said hold down bar and having an upper end which presses against a second side of said first locking plate, said first cam means and said leaf spring holding said first end of said printing plate in a selected position;

a second locking plate rotatably positioned in said groove opposite said first locking plate, said second locking plate extending substantially the width of said printing plate, said second locking plate having an axially extending hinge portion at its lower end and hook portions on its upper end, said hook portions being receivable in apertures in a second end of said printing plate;

a second cam means rotatably carried in a wall of said groove and having wrench receiving means on an end thereof for rotating said second cam means to cause said second cam means to press against a first side of said second locking plate throughout its length;

a spring carried in said hold down bar and pressing against a second side of said second locking plate, said second cam means and said spring holding said second end of said printing plate in a selected position; and

a hinge plate, said hinge plate having semicircular end portions opening downwardly to secure said hinge portions of said first and said second locking plates, said hinge plate being positioned in said groove beneath said hold down bar and above said transversely extending bottom portion of said leaf spring.

B 398,262

APPARATUS FOR REDUCING SHOCK AND OVERPRESSURE

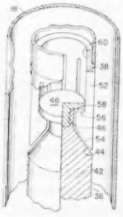
Carl E. Walter, Pleasanton, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Sept. 17, 1973, Ser. No. 398,262
Int. Cl. F42b *3/02*
U.S. Cl. 102—21.6 **10 Claims**
Group Art Unit 221

References Cited

UNITED STATES PATENTS

137,196	3/1873	Gotham	102/26
1,875,583	9/1932	Fox	102/21.8
3,707,188	12/1972	Heckman	102/21.4



1. In a system for the production of underground resources by the sequential detonation of a plurality of spaced apart nuclear explosives therein, a combination of elements in an emplacement string for connecting together a pair of adjacent nuclear explosives for emplacement of the explosives into a borehole comprising:

a pair of tubing string elements between said pair of adjacent nuclear explosives,

means for coupling together said pair of tubing string elements whereby all emplacement string elements including nuclear explosives below the upper of said pair of elements are suspended from said upper element, and

means for decoupling said pair of tubing string elements in response to the shock wave produced by detonation of one of said pair of nuclear explosives and traveling through that one of said pair of elements adjacent to said one explosive whereby the shock wave transmitted to the other of said nuclear explosives through the other of said pair of elements is attenuated.

B 282,081

GRENADE WITH FUZE

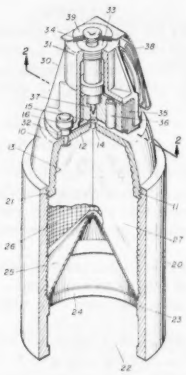
William G. Wolterman, Huntington Beach, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 11, 1972, Ser. No. 282,081
Int. Cl. F42b *13/50*; **F42c** *15/26*
U.S. Cl. 102—56 **2 Claims**
Group Art Unit 221

References Cited

UNITED STATES PATENTS

1,217,556	2/1917	Billant	102/81 X
3,093,072	6/1963	Pigman	102/56 X
3,580,174	5/1971	Apotheloz et al.	102/56



1. A dual purpose, artillery deliverable, submissile grenade for use against personnel and armored material targets which comprises:

a fragmenting, anti-personnel, hollow housing means, having a closed first end and a second open end which includes;

a hollow tubular member having an internally threaded end, a second unthreaded end, an internal concentrically protruding stand off wall rib positioned intermediate said threaded and unthreaded ends, an embossed inner housing wall intermediate said threaded end and said wall rib; and

a hollow cap having an externally threaded open end threadedly engaging said internally threaded end, said cap having an axially located cap lead train bore therein;

a hollow shaped charge cone positioned intermediate said first and second ends;

an explosive means charge which includes;

a high explosive shaped charge positioned intermediate said shaped charge cone and said closed first end for fragmenting said housing means, melting said shaped charge cone, and providing a high velocity molten jet stream from said open end against said target; and

a fuzing means fixedly attached proximate to said closed end for initiating said explosive means upon impact of said grenade on said target and for holding said grenade in a safe unarmed position when said grenade is being delivered by said artillery to said target.

B 112,422
ELECTRONIC COUNTING FUZE

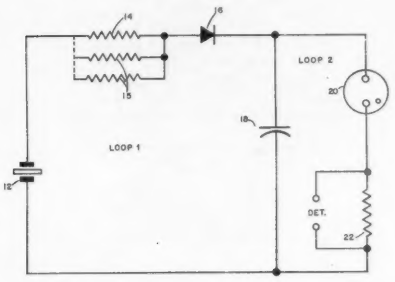
Carl J. Gardner, Wharton, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 3, 1971, Ser. No. 112,422
Int. Cl. F42c *11/00*
U.S. Cl. 102—70.2 R **5 Claims**
Group Art Unit 221

References Cited

UNITED STATES PATENTS

3,009,419	11/1961	Clay, Jr. et al.	102/70.2 I
3,018,732	1/1962	Tognola	102/70.2 I
3,054,352	9/1962	Perdreaux, Jr. et al.	102/70.2 G
3,106,161	10/1963	Wallbaum et al.	102/70.2 G
3,288,068	11/1966	Jefferson et al.	102/70.2 I
3,610,153	10/1971	Betts	102/70.2 A
3,624,451	11/1971	Gauld	102/70.2 A



1. A counting fuze for a land mine having a detonator, comprising:

an electrical source unit providing an output only when subject to pressure which includes:

a pressure-sensitive switching means; and

a source of electrical power, said source connected to said switching means, said source of electrical power activated and inactivated by respective closings and openings of said pressure-sensitive switching means;

a charge storage means, said storage means receiving a charge in pulse form from said electrical source unit upon each subjection of said source unit to pressure; and

electronic gating means, said gating means being connected intermediately between said storage means and said detonator, whereby said detonator will be activated after successive applications of pressure to said electrical source unit.

5. An electrical counting fuze, for a land mine having a detonator comprising seven circuit loops.

a first loop comprising in series connected relationship, a first capacitor, one closure of a double-pole single-throw switch, a second closure of said double-pole single-throw switch, and a battery;

a second loop comprising in series connected relationship, said battery, said second closure, a single-pole single-throw switch and a first resistor;

a third loop comprising in series connected relationship, said first resistor, a second capacitor, and a first blocking diode;

a fourth loop comprising in series connected relationship, said first blocking diode, a second blocking diode and a third capacitor;

a fifth loop comprising in series connected relationship, said third capacitor, a Shockley diode, and a second resistor;

a sixth loop comprising in series connected relationship, said second resistor, a trigger of a silicon control rectifier, and a cathode of said silicon control rectifier; and

a seventh lead loop comprising in series connected relationship, said trigger, an anode of said SCR, said detonator, said single-pole single-throw switch, said second capacitor, said second blocking diode, and said Shockley diode.

B 403,140
AUTOMATIC DELAY GRAZE SENSITIVE FUZE

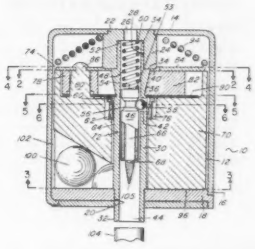
Stephan Kosonocky, and Lloyd D. Post, both of Morris, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1973, Ser. No. 403,140
Int. Cl. F42c *1/08*
U.S. Cl. 102—75 **6 Claims**
Group Art Unit 221

References Cited

UNITED STATES PATENTS

2,130,720	9/1938	Junehans	102/79
2,359,752	10/1944	Del Prato	102/80
2,381,900	8/1945	Graumann et al.	102/75
2,873,677	2/1959	Taylor et al.	102/75
3,726,229	4/1973	Kosonocky et al.	102/73



1. An automatic, graze sensitive, impact delay fuze for actuating a spin launched projectile which comprises:

a housing for holding said fuze therein, said housing having a forward end and a rear end;

a cylindrically shaped plunger member slidably positioned in said housing, said plunger having a plunger forward end, a plunger rear end and a centrally positioned axially aligned plunger-holder bore therein, said plunger forward end having a plunger-slider bore larger than and axially aligned with said plunger-holder bore and communicating therewith, and a plunger-detent counterbore larger than, and axially aligned and communicating with said plunger-slider bore;

firing pin detent means axially positioned in said fuze for placing said fuze in a "commit" position after said projectile is launched and has impacted;

a detonator axially positioned proximate to the rear end of said plunger; and

biased firing pin means, operatively held by said firing pin detent means, for forcibly striking and exploding said detonator upon decrease of the decelerating forces of impact; and

spin detent means rotatably supported on said plunger member within said plunger-detent counterbore for holding said fuze in a "safe" position until such time as said

projectile has seen a proper launch environment which includes;

a pair of nonsmmetrically U-shaped detent levers oppositely disposed and pivotally supported on said plunger member;

a disc shaped plunger-washer for operatively holding said detents to said plunger; and

a spring disc operatively positioned intermediate said U-shaped detents and said plunger-detent counterbore having a pair of detent springs integrally formed from said spring disc, said pair of detent springs biasedly holding said U-shaped detents so that said fuze is maintained in said "safe" position prior to said projectile being launched, and a plurality of radially positioned inwardly protruding restraining spring fingers operatively positioned intermediate said U-shaped detents and said plunger member for restraining said firing pin detent means so that said biased firing pin means will not be released by said firing pin detent means until said projectile impacts.

B 397,527

BALLISTIC DISC

Bryant R. Dunetz, R.D. No. 1, Box 446, Churchville, 21028, and Seymour Kronman, 415 Woodcrest Dr., Aberdeen, 21001, both of Md.

Filed Sept. 17, 1973, Ser. No. 397,527

Int. Cl. F42b *23/06*

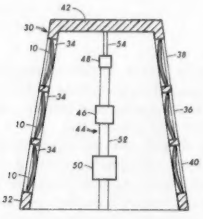
U.S. Cl. 102—92.1 **12 Claims**

Group Art Unit 221

References Cited

UNITED STATES PATENTS

1,244,298	10/1917	Cutting	102/61
1,301,098	4/1919	Bull	102/5
2,379,257	6/1945	Scott	102/5
3,386,380	6/1968	Francis	102/23
3,489,088	1/1970	Ballmoos et al.	102/61
3,517,615	6/1970	Jacobs	102/22
3,683,809	8/1972	Burkle	102/24 R
3,695,141	10/1972	Kronman et al.	102/92.1



1. A substantially spherically curved metallic high-velocity ballistic disc of substantially circular periphery, said disc being non-disintegrating prior to impact and having a concave and a convex side, the curved central portion of said disc being of greater thickness than the peripheral portion of said disc, said disc prior to firing being yieldingly retainable about its periphery within a circular aperture of a casing with the concave side of said disc facing outwardly, and said disc upon being fired assuming a convex streamlined shape.

7. A munition comprising a casing having a curved side, a plurality of round apertures in said side, and ballistic discs according to claim 1 seated in said apertures.

B 449,647

POWER DRIVEN CONVEYOR

Bruce E. Block, and Philip H. Samuelson, both of Rockford, Ill., assignors to Rockford Automation, Inc., Rockford, Ill.

Filed Mar. 11, 1974, Ser. No. 449,647

Int. Cl. B61b *13/08*

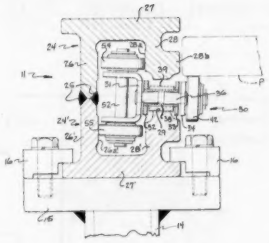
U.S. Cl. 104—172 B **10 Claims**

Group Art Unit 312

References Cited

UNITED STATES PATENTS

1,852,942	4/1932	Streine	198/183
3,237,755	3/1966	Weihe	198/183
3,511,187	5/1970	Hanna	104/172 B
3,631,967	1/1972	Converse et al.	198/183



1. A power driven conveyor having spaced, parallel trackways extending in a closed loop so that the conveyor is and endless conveyor, and comprising, in combination:

each trackway having identical elongate, upper and lower extruded members welded together to provide a generally C-shaped cross-section, each trackway having wall means defining an internal passageway and arranged to provide a laterally opening access to the passageway, said access opening facing the other trackway and extending the full length of the trackway;

the upper member having a generally upright face on the wall means directly above the access opening and defining part of the internal passageway;

the lower member having a generally upright face on the wall means opposite the access opening and at a level there-below, and defining part of the internal passageway; the lower member also having an upwardly facing bearing surface at the bottom of the access opening;

a conveyor chain disposed in each access opening and in contact with the bearing surface; each chain having a plurality of wheels mounted thereon and disposed in the internal passageway; about one-half of said wheels arranged to contact and ride against the upright face directly above the access opening, and the remainder arranged to contact and ride against the upright face opposite the access opening; and

means engaged with the conveyor chains for driving them along their respective trackway.

B 364,022

REFUSE BURNER APPARATUS

Ralph E. Watts, 1313 Sewanee Dr., Florence, S.C. 29501

Continuation-in-part of Ser. No. 339,337, March 8, 1973, Pat. No. 3,807,323. This application May 30, 1973, Ser. No. 364,022

Int. Cl. F23g 5/12

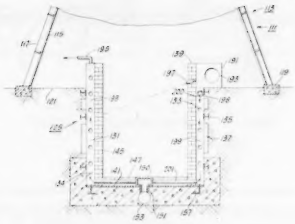
U.S. Cl. 110—8 C 7 Claims

Group Art Unit 344

References Cited

UNITED STATES PATENTS

3,354,847	11/1967	Clement et al.	110/7
3,452,690	7/1969	Tarbox et al.	110/7
3,483,832	12/1969	Ball et al.	110/7
3,704,676	12/1972	Davies et al.	110/8



1. In a refuse burner apparatus including a hollow wall structure of inner and outer spaced-apart plates and a layer of insulating material disposed on said inner wall plate, with a layer of refractory material covering the insulating layer; with a cap plate covering the top of the wall structure; and with a bottom plate on which the wall structure rests, the combination with said wall structure of:

a. a first conduit communicating with said hollow wall structure for introducing a cooling fluid thereinto to cool said wall structure;

b. means for introducing a cooling fluid into said first conduit;

c. means for flowing said cooling fluid out of said wall structure;

d. a second conduit carrying said cooling fluid; and

e. a third conduit communicating with said second conduit and having a plurality of nozzles that direct fluid flowing in said third conduit into said burner apparatus.

7. In a refuse burner apparatus, the improvement comprising:

a. a hollow wall structure comprised of inner and outer membranes with means therebetween for maintaining said membranes in spaced-apart relation;

b. means for introducing a cooling fluid into one portion of said hollow wall structure; and

c. means for conveying said fluid from said one wall structure portion to another wall structure portion.

B 467,684

APPARATUS FOR FABRICATING COMPOSITE CERAMIC MEMBERS

Prodyot Roy, Saratoga; James L. Simpson, San Jose, and Edward A. Aitken, Danville, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Division of Ser. No. 301,411, Oct. 27, 1972,. This application May 7, 1974, Ser. No. 467,684

Int. Cl. C23c 13/12

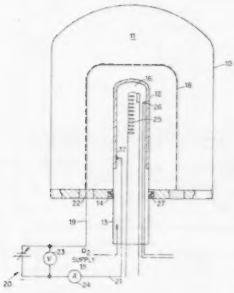
U.S. Cl. 118—49.1 6 Claims

Group Art Unit 352

References Cited

UNITED STATES PATENTS

2,363,781	11/1944	Ferguson	118/49 X
2,802,127	8/1957	Dobischek et al.	118/49 X
2,948,635	8/1960	Koller	118/49.1 X
3,208,873	9/1965	Ames et al.	118/49.1 X
3,208,873	9/1965	Ames et al.	118/49.1 X



1. An apparatus for fabricating composite ceramic members composed of a stabilized zirconia member having a coating of ThO_2: 15 percent Y_2O_3 on at least one surface thereof comprising: a container means within which an associated tubular zirconia member to be coated is positioned; a closed end of said member extending through, and in sealing relation with, a wall of said container; a mixture of gaseous $ThCl_4$ and YCl_3 contained in said container means for contact with the outer surface of said member; anode means disposed within said container and spaced from at least a portion of said outer surface; cathode means disposed within said tube and contacting at least a surface portion thereof opposite said portion of the outer surface; power supply means connected to said anode and cathode means for producing an electrical potential gradiant across the tubular wall portion between said surface portions; means for supplying oxygen within said member; and means for heating said member whereby ions of oxygen migrate through said wall portion to effect said reaction and coating, anode means constructed to be positioned about and in spaced relation with the portion of an associated member to be coated which is in contact with said gaseous mixture, cathode means constructed to be in contact with a portion opposite the first-mentioned portion of an associated member to be coated, power supply means connected to said cathode means and to said anode means for producing an electrical potential gradient across an associated member to be coated, means for supplying oxygen to the oxygen adjacent said cathode means, and means for heating an associated member to be coated.

B 323,666
APPARATUS FOR DEVELOPING LATENT ELECTROSTATIC IMAGES

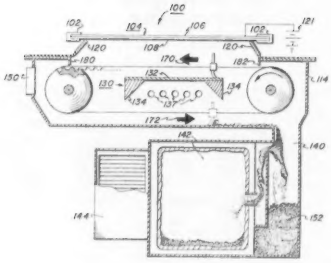
Lothar S. Jeromin, Sierra Madre, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 15, 1973, Ser. No. 323,666
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 19 Claims
Group Art Unit 352

References Cited

UNITED STATES PATENTS

2,815,734	12/1957	Carlson	118/637
2,817,598	12/1957	Hayford	118/637 X
2,918,900	12/1959	Carlson	118/637
3,640,246	2/1972	Jeromin et al.	118/629
3,646,910	3/1972	Cade et al.	118/637
3,774,573	11/1973	Hindell	118/629



1. Apparatus for developing a latent electrostatic image formed on the surface of an insulating member comprising:

a chamber having a pair of opposed sidewalls,

means for supporting said insulating member, said surface facing said chamber,

means for supplying a cloud of charged developer particles to said chamber through a port in one of said opposed sidewalls,

means for supplying gas through a port in the other of said opposed sidewalls,

a baffle overlying said ports through which said developer particles and said gas are introduced into said chamber whereby said gas and developer particles mix under said baffle, said baffle comprising a conductive upper portion which is electrically floating and which faces the surface of said insulating member, said insulating member overlying a conductive substrate, and

means for biasing said conductive substrate to a predetermined potential whereby the electric field between said surface and said conductive baffle portion and said chamber bottom is substantially uniform.

B 321,533
AQUARIUM ASSEMBLY

Jack V. Miller, Marietta, Ga., assignor to M & L Aquatics Division of Ser. No. 184,358, Sept. 28, 1971. This application Jan. 5, 1973, Ser. No. 321,533

Int. Cl. A01k *64/00*
U.S. Cl. 119—5 3 Claims
Group Art Unit 333

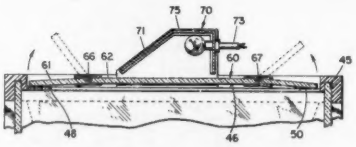
References Cited

UNITED STATES PATENTS

2,394,870	2/1946	Orlin	160/229
3,167,051	1/1965	Hovlid	119/5
3,676,665	7/1972	Louis	240/2L C X

FOREIGN PATENTS OR APPLICATIONS

1,185,420	3/1970	Great Britain	119/5



1. An aquarium assembly of the type including an aquarium tank having opposed upright side walls opposed upright end walls and a bottom connected together to define an upwardly open water receiving cavity, the upper edges of said walls terminating in an upper end in a common plane about parallel to said bottom; the combination therewith of:

a. an upper frame along the upper end of said tank, said frame having opposed inwardly projecting supporting surfaces spaced downwardly from the uppermost portions of said upper frame;

b. a transparent top received in said upper frame, said transparent top extending over said cavity for closing the upper end of said tank; and

c. a light means for said tank, said light means being characterized by a light socket, a light means for said light socket, a housing carrying said socket and covering said light means, a pair of opposed complimentary end wall members on the opposite ends of said housing, said housing having a downwardly opening cavity containing said light means for directing light from said light means into said tank through said top, said end wall members having flat bottom portions resting upon said supporting surfaces, said frame having upright surfaces adjacent said supporting surfaces for preventing appreciable lateral movement of said light means, said end wall members being provided with opposed inwardly directed notches respectively receiving the the parallel edges of said top, said top being of a length that it may prevent any appreciable movement of said end wall members toward each other, said notches spacing a portion of said top above and off of said supporting surfaces, the notches of said end wall members loosely encompassing said top so that said light means may be slidably moved along the surface of said supporting surfaces and said top may slide within said notches as the position of said light means is adjusted with respect to said aquarium tank.

B 282,390

STAGED COMBUSTION ENGINES AND METHODS OF OPERATION

Robert M. Siewert, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 252,853, May 12, 1972. This application Aug. 21, 1972, Ser. No. 282,390

Int. Cl. F02b *75/10, 75/12*

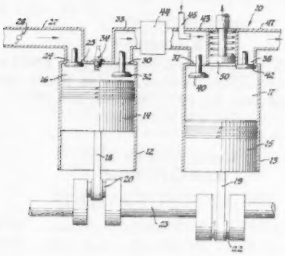
U.S. Cl. 123—1 R 6 Claims

Group Art Unit 342

References Cited

UNITED STATES PATENTS

2,113,601	4/1938	Pratt	123/1
2,113,602	4/1938	Pratt	123/1
2,132,646	10/1938	Rieppel et al.	123/1
2,249,997	7/1941	Wydler	123/1
2,645,216	7/1953	Campbell	60/15
3,142,289	7/1964	Platner et al.	123/55 VE
3,400,692	9/1968	Jones	123/8.07
3,513,929	5/1970	Kim	123/1



4. The method of operating an internal combustion engine of the type having expansible chambers in which a compressed charge is burned and expanded to supply net energy per cycle to a rotating shaft, the method comprising the steps of:

a. successively compressing, burning and expanding a mixture composed primarily of: (1) air and hydrocarbon fuel in combustion supporting proportions but substantially richer in fuel than a stoichiometric mixture, and (2) recirculated combustion products, to produce combustion products having low residuals of nitrogen oxide and high residuals of incompletely burned fuel combustibles substantially in the form of H_2 and CO, while delivering primary energy to the rotating shaft;

b. adding air to said combustion products in amount sufficient to form a new mixture having (1) an overall engine air-fuel ratio slightly lean in fuel, (2) available total energy substantially less than that of the hydrocarbon fuel originally supplied, and (3) a capability of compression ignition, and burnable to minimize residuals of combustibles while maintaining low residuals of nitrogen oxides;

c. compressing said last mixture sufficiently to initiate combustion;

d. varying at least one of the engine operating conditions consisting of (1) the temperature of the combustion products utilized to form said last mixture in step (b) and (2) the ratio of compression in step (c), as required to obtain self-ignition of said last mixture near the end of the compression step (c); and

e. burning said least mixture without substantial additional compression and expanding the burned mixture to deliver secondary energy to the rotating shaft and to yield combustion products with minimum residuals of combustibles and nitrogen oxides said recirculated combustion products being from one of said expansion steps.

B 295,481

COOLING SYSTEM FOR THE COOLING OF THE HOUSING OF A ROTARY PISTON INTERNAL COMBUSTION ENGINE

Heinz Lamm, Esslingen-St. Bernhardt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Oct. 6, 1972, Ser. No. 295,481

Claims priority, application Germany, Oct. 9, 1971, 2150478

Int. Cl. F02b *55/10*

U.S. Cl. 123—8.01 28 Claims

Group Art Unit 343

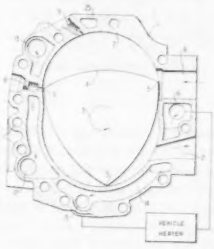
References Cited

UNITED STATES PATENTS

3,298,330	1/1967	Ryusuke Ito et al.	123/8.01
3,444,845	5/1969	Scheiterlein	123/41.29 X

OTHER PUBLICATIONS

"Curtiss-Wright's Experimental Rotating Combustion Engines," by Dr. Max Bentele, (Received 10-14-63).



1. A cooling system, for cooling housing means of a rotary piston internal combustion engine of the type having housing means enclosing a combustion space within which a multilobed rotary piston rotates, the housing means including a casing means circumferentially surrounding the piston, the casing means having an inwardly facing running surface engageable with outer portions of the lobes of the piston during rotation thereof, the engine including inlet and outlet channels for respectively accommodating entry of combustible materials into the combustion space and exit of exhaust gases from the combustion space, the running surface and piston being so configured and the inlet and outlet channels being so positioned that combustion gases of differing temperatures are in contact with different circumferential portions of the running surface during operation of the engine; said cooling system comprising:

a first cooling circuit for accommodating circulation of a first cooling fluid,

and a second cooling circuit for accommodating circulation of a second cooling fluid,

said first and second circuits being separate from one another,

said first cooling circuit including a first cooling space formed in said casing means and extending adjacent a first portion of the circumference of said running surface with a cooling fluid inlet to said first cooling space positioned adjacent the circumferential portion of the running surface which is in contact with the hottest combustion gases during operation of the engine,

wherein said first cooling space extends around the circumference of said running surface in a direction opposite the rotational direction of the piston from said cooling fluid inlet to a cooling fluid outlet positioned adjacent the circumferential portion of the running surface which is in contact with the coolest combustion gases during operation of the engine.

B 405,495

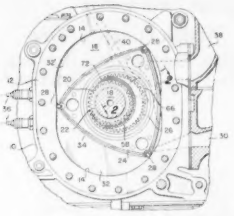
ACCESSORY SHAFT DRIVE FOR A ROTARY MACHINE

Erkki A. Koivunen, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 11, 1973, Ser. No. 405,495
Int. Cl. F02b 67/04
U.S. Cl. 123—8.01 4 Claims
Group Art Unit 343

References Cited
UNITED STATES PATENTS

3,163,156	12/1964	Peras	123/8.01
3,483,694	12/1969	Huber et al.	418/61 A



1. In a rotary machine comprising a cylindrical housing, a side housing closing each side of said cylindrical housing, said cylindrical housing having an internal peripheral wall cooperating with end walls of said side housings defining a cavity therein, a crankshaft rotatably mounted in said side housings and extending through said cavity, a rotor rotatably mounted on said crankshaft for rotation within said cavity, a fixed phasing gear attached to one of said side housings, a phasing gear secured to said rotor and meshing with said fixed gear so that said rotor rotates and planetates relative to said crankshaft, an accessory drive shaft rotatably mounted in said one of said side housings adjacent said crankshaft, a driven gear attached to said accessory shaft, and a cylindrical drive gear attached to said crankshaft and extending axially therealong overlying said fixed phasing gear and meshing with said accessory shaft driven gear rotating said accessory shaft with said crankshaft, said cylindrical drive gear having a circumferential slot therein permitting meshing engagement between said fixed phasing gear and said rotor phasing gear.

B 406,800

ROTOR MOUNTED SPARK PLUG FOR ROTARY ENGINE

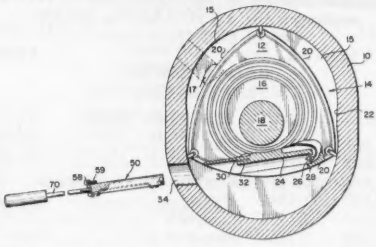
Harvey A. Burley, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1973, Ser. No. 406,800
Int. Cl. F02b 53/12
U.S. Cl. 123—8.09 5 Claims
Group Art Unit 343

References Cited
UNITED STATES PATENTS

3,762,377	10/1973	Anthony et al.	123/8.09 X

1. In a rotor mounted spark plug for a rotary combustion engine, the engine comprising a housing having a cavity, a rotor disposed in said cavity, said rotor having a plurality of adjoining peripheral faces, an output shaft rotatably supported by said housing and having an eccentric rotatably supporting said rotor, said rotor peripheral faces and said housing cooperatively providing a plurality of variable volume working chambers spaced around said rotor that move with said rotor within said housing, intake passage means periodically connected to said working chambers as said rotor moves, exhaust passage means periodically connected to each of said working chambers as said rotor moves; the improvement comprising: said rotor peripheral faces each having a spark plug receiving recess formed therein, a spark plug assembly mating with and



being releasably positioned in said recess, and means releasably retaining said spark plug in said recess during engine operation, said means being operable to release said spark plug for removal and insertion of said spark plug assembly through said exhaust passage means.

B 369,997

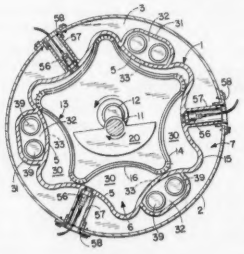
ROTARY INTERNAL COMBUSTION ENGINE

James B. Meaden, 3009 Norwood, Slayton, Minn. 56172

Filed June 14, 1973, Ser. No. 369,997
Int. Cl. F02b 55/14
U.S. Cl. 123—8.45 1 Claim
Group Art Unit 343

References Cited
UNITED STATES PATENTS

3,034,484	5/1962	Stefancin	418/117 X
3,131,678	5/1964	Peras	418/61 B X
3,200,794	8/1965	Peras	418/61 B X
3,670,705	6/1972	Saito	418/36 X



1. A rotary internal combustion engine comprising:

a. housing means including an internally toothed gear member having an even number of teeth and end wall members connected to the opposite ends of said gear member and cooperating therewith to define a rotor chamber;

b. a crank shaft journaled in said housing means on the axis of said internally toothed gear member and having a crank portion disposed within said rotor chamber;

c. an externally toothed rotor member journaled on said crank portion coaxially therewith, said rotor member having one less number of teeth than said gear member, said rotor member being disposed for rotary movement on its own axis and for orbital movement in said rotor chamber with the common axis of said rotor member and crank portion describing an orbit about the axis of said crank shaft;

d. the teeth of said rotor member moving successively into and out of meshing engagement with the internal teeth of said gear member and having sliding engagement with said internal teeth when out of meshing engagement therewith to define therewith alternately expanding and contracting compartments responsive to said rotary and orbital movement of the rotor;

e. alternate ones of said internal teeth having openings therein for entry of gaseous fuel to said compartments and for exhaust of gases of combustion from said compartments;

f. valve means controlling intake flow of gaseous fuel to said compartments and exhaust flow of gases of combustion therefrom; and

g. igniter means mounted in said internal teeth alternately between the teeth containing said openings for igniting gases of combustion in said compartments.

B 302,692

INTERNAL COMBUSTION ENGINE

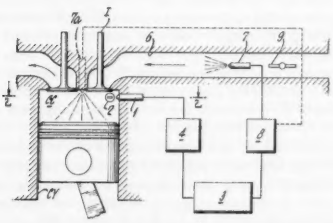
Charles W. Davis, Simsbury, Conn., assignor to Texaco Inc., New York, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,692
Int. Cl. F02b *19/10, 19/16*
U.S. Cl. 123—32 ST **9 Claims**
Group Art Unit 342

References Cited

UNITED STATES PATENTS

1,483,619	2/1929	Smith	123/32 ST
2,184,357	12/1938	Mallory	123/32 ST
2,484,009	10/1949	Barber	123/32 ST
2,652,039	9/1953	Weslake	123/32 ST
2,758,576	8/1956	Schlamann	123/32 ST
2,767,692	10/1956	Barber	123/32 ST
2,803,230	8/1957	Bensinger	123/32 ST
3,094,974	6/1963	Barber	123/32 ST
3,154,059	10/1964	Witzky	123/32 ST
3,315,650	4/1967	Bishop	123/32 ST
3,439,656	4/1969	Hideg	123/32 ST
3,443,552	5/1969	Von Seggern	123/32 ST
3,696,798	10/1972	Bishop	123/32 ST
3,699,929	10/1972	Bennethum	123/8.09
R25,578	5/1964	Witzky	123/32 ST



1. An apparatus for the coordinated control of the operation of an internal combustion engine with a leaner usual fuel-air mixture, i.e., a fuel to air (F/A) ratio less than 0.055 (weight basis), by variation of the mixture strength with maximum air consumption comprising a first control means comprising a pilot charge fuel control unit and including injection means for providing an intermittent timed injection of a predetermined quantity of a pilot fuel charge into the combustion chamber of a cylinder of said engine and positive ignition means, e.g. a spark plug, in said combustion chamber adjacent said injection means, intake means for providing a variable premixed fuel-air mixture leading into, said combustion chamber a second control means comprising a premixed charge fuel control unit and including a nozzle positioned in said intake means for providing fuel thereinto, a first pivoted triple linkage comprising an arm, a pinned link and a control lever in operative association with said second control means and electrical switch means actuated thereby, a second triple linkage comprising an arm and with said first control means, one of said pair of slotted links being joined pivotally to said control lever of said first triple linkage, said pair of slotted links responding to the positioning of said control lever of said first triple linkage, one of said pair of slotted links of said second triple linkage being responsive to said electrical switch means.

B 356,724

VACUUM CONTROL ASSEMBLY

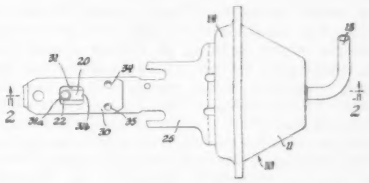
Clarence L. Julian, Daleville, and Robert E. Young, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed May 3, 1973, Ser. No. 356,724
Int. Cl. F02p *5/04*
U.S. Cl. 123—117 A **1 Claim**
Group Art Unit 342

References Cited

UNITED STATES PATENTS

2,131,020	9/1938	Arthur	123/117 A
2,651,316	9/1953	Fageol	92/100
3,487,819	1/1970	Weyazaki et al.	123/117 A



1. The vacuum control assembly for operating the breaker plate of an automotive type ignition distributor to provide ignition spark vacuum advance for an associated internal combustion engine comprising, a vacuum unit including at least a casing, a diaphragm enclosed within said casing in such a manner as to provide a vacuum chamber, a spring interposed between said diaphragm and said casing for urging said diaphragm in a first direction, a vacuum port communicating with said vacuum chamber and an operating rod oscillated linearly by said diaphragm having an elongated portion secured to said diaphragm and an operating end portion extending substantially normal to said elongated portion for operatively engaging said breaker plate, a mounting bracket rigidly secured to said casing and extending in a direction along said operating rod, and a range bracket member having an elongated slot of a length determined by the desired range of degrees of ignition spark vacuum advance from zero to maximum which accommodates said operating end portion of said operating rod, said range bracket member, with a predetermined vacuum applied to said vacuum port, being positioned with one end wall thereof in engagement with said operating end portion of said operating rod and rigidly secured to said mounting bracket member whereby an initial compression is set in said spring.

B 412,867

EXHAUST GAS RECIRCULATION SYSTEM

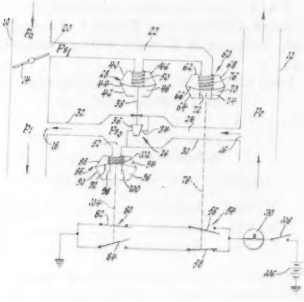
Michael P. Murphy, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1973, Ser. No. 412,867
Int. Cl. F02m 25/06
U.S. Cl. 123—119 A 2 Claims
Group Art Unit 342

References Cited

UNITED STATES PATENTS

3,291,461	12/1966	Pope	123/119 F
3,779,222	12/1973	Lorenz	123/119 A



1. In an internal combustion engine, the combination comprising: means including an intake passage through which ambient air is drawn into the engine from the surrounding atmosphere; means including an exhaust passage through which exhaust gases are forced from the engine into the surrounding atmosphere; means responsive to the operation of the engine for developing an input signal pressure which differs from the atmospheric pressure by more than a first predetermined amount when the recirculation of exhaust gases from the exhaust passage to the intake passage is desired and which differs from the atmospheric pressure by less than the first predetermined amount when the recirculation of exhaust gases from the exhaust passage to the intake passage is not desired; means including a recirculation valve responsive to the input signal pressure and coupled between the exhaust passage and the intake passage for opening to permit the recirculation of exhaust gases from the exhaust passage to the intake passage through the valve when the input signal pressure differs from the atmospheric pressure by more than the first predetermined amount and for closing to prohibit the recirculation of exhaust gases from the exhaust passage to the intake passage through the valve when the input signal pressure differs from the atmospheric pressure by less than the first predetermined amount; means responsive to operation of the recirculation valve for developing an output signal pressure which differs from the atmospheric pressure by more than a second predetermined amount when the recirculation valve is closed and which differs from the atmospheric pressure by less than the second predetermined amount when the recirculation valve is open; and means responsive to the input and output signal pressures for indicating that the recirculation valve is stuck closed when the input signal pressure differs from the atmospheric pressure by more than the first predetermined amount and the output signal pressure differs from the atmospheric pressure by more than the second predetermined amount or for indicating that the recirculation valve is stuck open when the input signal pressure differs from the atmospheric pressure by less than the first predetermined amount and the output signal pressure differs from the atmospheric pressure by less than the second predetermined amount.

B 394,188

QUICK WARM-UP INTAKE MANIFOLD

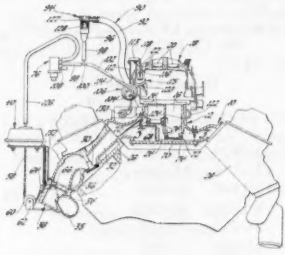
William D. Bond, Warren, and Bruce E. Zemke, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 4, 1973, Ser. No. 394,188
Int. Cl. F02m 31/00
U.S. Cl. 123—122 H 4 Claims
Group Art Unit 342

References Cited

UNITED STATES PATENTS

2,603,199	7/1952	Moseley	123/122 H
2,989,956	6/1961	Drinkard	123/122 H
3,732,696	5/1973	Marahi	123/122 H
3,814,071	6/1974	Buchwald	123/122 H



1. A fuel supply system for an internal combustion engine of the type including an intake manifold having a cross-over passageway therein including a thin plate stove exposed on one surface thereof to air-fuel flow to the intake manifold and to exhaust flow on the opposite surface thereof through the cross-over passageway, the improvement comprising: vacuum actuated heat riser valve means having an opened and a closed position, a thermally responsive vacuum control device having means sensing the engine coolant temperature and valve means responsive thereto to selectively direct vacuum to the vacuum actuated heat valve means below a predetermined coolant temperature for maintaining it in its closed position to divert exhaust flow through the crossover passageway during an early fuel evaporation phase of control and operative above the predetermined coolant temperature to direct atmospheric pressure to the heat valve means to open the heat riser valve means to reduce exhaust flow through the crossover passage following the early fuel evaporation phase of operation, a carburetor including a choke for supplying an air-fuel mixture to the intake manifold, means including a vacuum operator to pull the choke open to a start position immediately after the engine has started, and means for continuing opening of the choke at a reduced rate from the start position to a full open position following a predetermined time period, said vacuum operated heat riser valve means maintaining heat flow to the stove during the choke opening period and for a period thereafter to assure vaporization of liquid fuel droplets flowing from the carburetor against the stove, said thermally responsive vacuum control device conditioning said heat riser valve means upon a predetermined increase in engine coolant temperature to open said riser valve means to prevent exessive heating of the stove and air-fuel flow into excessive engine once the engine is at a predetermined temperature as reflected by the predetermined increase in engine coolant temperature.

B 316,239

HORSEPOWER LIMITER AND OVERFUELING CONTROL MECHANISM

Jerry A. Clouse, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 18, 1972, Ser. No. 316,239
Int. Cl. F02d 1/06
U.S. Cl. 123—139 ST 6 Claims
Group Art Unit 342

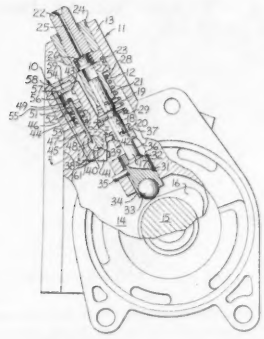
References Cited

UNITED STATES PATENTS

3,153,405	10/1964	Paterson et al.	123/179 L X
3,217,700	11/1965	Huse	123/179 L X
3,311,101	3/1967	Huse	123/179 L
3,311,102	3/1967	Voigt	123/179 L

FOREIGN PATENTS OR APPLICATIONS

877,599	9/1961	Great Britain	123/139 ST



6. A horsepower limiter and overfueling control mechaniam, for an internal combustion engine having a fuel pump and a fuel control device operatively associated therewith for regulating the horsepower output of the engine, comprising;

a stop surface formed on such fuel control device;

a housing having a first cylindrical bore disposed adjacent to the fuel control device, and a second cylindrical bore disposed coaxial with said first bore and terminating in an annular shoulder;

an elongated movable rod slidably disposed in said first bore having opposite ends;

a reciprocatable piston slidably disposed in said second bore and operatively attached to said movable rod for moving it between a first position in non-interferring relation to said stop surface and a second positively located position in which one of said ends is adapted for selective direct engagement with said stop surface, said second position being established by engagement between said piston and said annular shoulder;

a source of pressurized fluid in communication with said second bore for moving said piston and said movable rod to said second position;

biasing means for resiliently urging said piston and said movable rod to said first position when said source of pressurized fluid is interrupted; and

adjustment means intergral with said movable rod including a threaded portion formed on the other of said ends of said elongated rod and screw-threadably received coaxially by said piston for adjustably attaching said elongated rod to said piston, a tool receiving notch formed in said piston and tool receiving means formed in said other end of said elongated rod for effecting rotation of said elongated rod relative to said piston to vary the disposition of said one end of said elongated rod relative to said stop surface on the fuel control device and said piston when said piston is in said second position for selectively varying the range of operation of the fuel control device to vary the maximum horsepower output of the engine.

B 204,161

EMISSION CONTROL METHOD AND APPARATUS FOR SMOKESTACKS OR OTHER WASTE GAS DISCHARGE STACKS

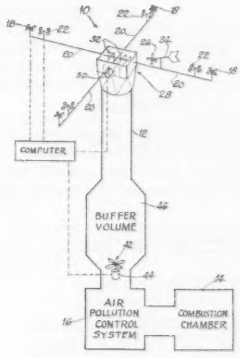
James Weinman, and Charles R. Stearns, both of 1225 W. Dayton St., Madison, Wis. 53576

Filed Dec. 2, 1971, Ser. No. 204,161
Int. Cl. F23j 11/12
U.S. Cl. 126—307 A 19 Claims
Group Art Unit 344

References Cited

UNITED STATES PATENTS

47,111	4/1865	Kipe	98/72
526,492	9/1894	Kaul	98/74
1,059,010	4/1913	Swartwout	98/68
1,100,296	6/1914	Gorrien	98/74
2,193,877	3/1940	Marsalis	98/85 X
2,279,016	4/1942	Silver	98/72
2,529,491	11/1950	Gadzuk	98/68 X
2,662,547	12/1953	Comeau	137/486 X
2,704,503	3/1955	Roos	98/74
3,211,080	10/1965	Rader	98/72
3,548,865	12/1970	Povinger	137/486



1. A method of controlling the waste emissions from a waste gas discharge stack,

comprising the steps of measuring downwardly directed wind components in the neighborhood of the top of the stack,

and closing the stack to prevent the discharge of waste emissions therefrom when a downward wind component exceeding a predetermined magnitude is measured,

the stack being opened in the absence of a downward wind component, exceeding said predetermined magnitude,

the stack being kept open in the absence of a downward wind component exceeding said predetermined magnitude regardless of the presence or absence of horizontal wind components in the neighborhood of the top of the stack.

6. Apparatus for controlling waste emissions from a waste gas discharge stack

comprising valve means for selectively closing the stack to prevent the discharge of waste emissions therefrom,

vertical wind sensor means for detecting a downward vertical wind component in the vicinity of the stack,

and control means for operating said valve means to close the stack when a downward vertical wind component is detected by said sensor means,

said control means comprising means for causing said valve means to open the stack in the absence of such downward vertical wind component regardless of the presence or absence of a horizontal wind component in the vicinity of the stack.

B 321,018

HEART BEATING EXAMINING APPARATUS

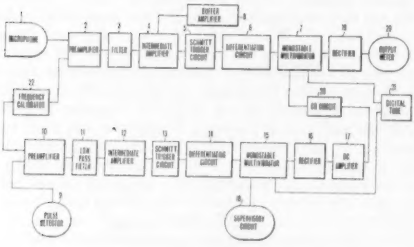
Hiroshi Okada; Hiroshi Horibe; Yasushi Mizuno; Shoji Yasui; Kazuo Ikegaya, and Nobuo Suzumura, all of Nagoya City, Japan, assignors to Fukuda Denshi Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1973, Ser. No. 321,018
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 P **9 Claims**
Group Art Unit 335

References Cited

UNITED STATES PATENTS

3,030,946	4/1962	Richards	128/2.06 R
3,132,208	5/1964	Dymski et al.	128/2.05 S X
3,139,086	6/1964	Botsch et al.	128/2.05 P
3,474,778	10/1969	Yen	128/2.06 F
3,581,735	6/1971	Gentner	128/2.05 S
3,651,798	3/1972	Egli et al.	128/2.05 P
3,704,706	12/1972	Herczfeld et al.	128/2.05 T
R27,042	1/1971	Jorgensen et al.	128/2.05 R



1. Apparatus for examining the beating of the heart comprising a combination of a heart beating measuring circuit, a heart pulse measuring circuit and a circuit for interconnecting said beating measuring circuit and said pulse measuring circuit, said heart beating measuring circuit including means for detecting the beating of the heart of a patient for producing signals of a plurality of frequencies, a filter coupled to receive said signals for selectively passing a signal of a predetermined frequency among said signals, means for deriving out the portions of the output from said filter which have a value exceeding a predetermined level, and means responsive to each of said portions for producing an electric pulse having a definite width; said heart pulse measuring circuit including means for producing a heart pulse signal, and means responsive to said heart pulse signal for producing a DC signal proportional to the period of heart pulses, and said interconnecting circuit including means responsive to said DC signal for controlling the width of said electric pulse produced by said beating measuring circuit inversely related to said period.

B 302,271

METHOD FOR LYMPHOCYTE DEPLETION

Thomas S. Hargest, 1078 Winslow Dr., Charleston, S.C.

Filed Oct. 30, 1972, Ser. No. 302,271
Int. Cl. A61m *01/03, 05/00*
U.S. Cl. 128—214 R **10 Claims**
Group Art Unit 335

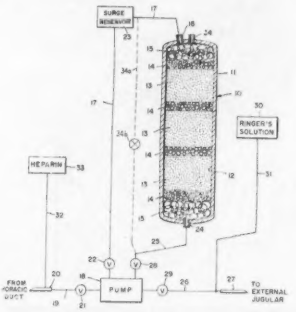
References Cited

UNITED STATES PATENTS

2,222,123	11/1940	Schwab	128/214 R
2,682,268	6/1954	Ryan et al.	23/258.5
3,448,041	6/1969	Swank	210/23
3,492,396	1/1970	Dalton et al.	128/290 X
3,511,238	5/1970	Von Wrangell	128/214 R
3,593,854	7/1971	Swank	210/436
3,701,433	10/1972	Krakauer et al.	128/214 C X
3,719,182	3/1973	Rose	128/214 R X

OTHER PUBLICATIONS

Weinstein et al., – T. Amer. Soc. Art. Inter. Orgs., Vol. XII, 1966, pp. 26–32.



1. A method for removing lymphocytes from the lymph of a living vertebrate, comprising the steps of surgically redirecting the flow of lymph from a major lymph duct into a filter column containing a mass of irregularly-shaped glass microparticles having sizes within the range of about 37 to 105 microns, controlling the rate of flow of lymph through said column to maintain a velocity of approximately 12 to 20 centimeters per hour, and returning the filtrate to the vascular system without interrupting the flow thereof.

B 313,594

RECTANGULAR DISPOSABLE DIAPER HAVING A CONTOURED ABSORBENT PAD

Charles A. Lee, and Frank D. Sorrells, both of Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed Dec. 8, 1972, Ser. No. 313,594
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **5 Claims**
Group Art Unit 335

References Cited

UNITED STATES PATENTS

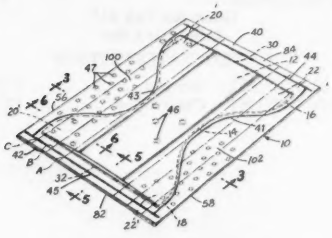
2,788,003	4/1957	Morin	128/284
3,180,335	4/1965	Duncan et al.	128/287
3,402,715	9/1968	Liloia et al.	128/287
3,636,952	1/1972	George	128/287
3,683,916	8/1972	Mesek et al.	128/287
3,721,242	3/1973	Krusko	128/287
3,744,494	7/1973	Marsan	128/287

1. A disposable diaper comprising in combination,

a liquid impervious backing sheet having rectangular dimensions,

a liquid pervious cover sheet, substantially coextensive in length with said backing sheet and at least as wide as said backing sheet, disposed in superposed relation to said backing sheet and covering said backing sheet to isolate said backing sheet from the skin of a person to whom the diaper is applied,

a continuous absorbent pad of generally hour-glass profile having a midsection and opposite end portions disposed between said backing sheet and said cover sheet, said pad in its end portions extending laterally substantially to the side margins of said backing sheet, whereby said pad at its ends substantially encompasses the waist of a person to whom the diaper is applied but is more narrow than said backing sheet, portions of said cover sheet overlying said backing sheet in the crotch region of said diaper and laterally of said pad midsection to define a span of diaper



that is substantially free of said pad on each side of said diaper,

continuous bond line means joining said backing sheet to said cover sheet along lines disposed on opposite sides of said pad immediately adjacent to and aligned with the respective contours of said side margins, said lines being substantially coextensive in length with the longitudinal dimension of said pad and defining a substantially liquid impervious barrier against lateral migration of liquid exudate from said pad,

said diaper being folded with a plurality of longitudinal folds along each side edge thereof, said folds incorporating said spans therein whereby when said diaper is applied with said narrow midsection of said pad disposed in the crotch of said person, said spans at least partially encircle the legs of said person to securely position said diaper about said legs and maintain said pad positioned within said crotch.

B 437,173
DISPOSABLE DIAPER

Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Continuation-in-part of Ser. No. 373,247, June 25, 1973, abandoned. This application Jan. 28, 1974, Ser. No. 437,173
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **1 Claim**
Group Art Unit 335

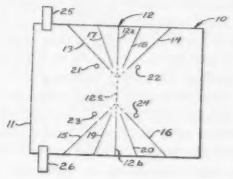
References Cited
UNITED STATES PATENTS

3,744,494	7/1973	Marsan	128/287

1. A generally rectangular disposable diaper comprising an outer impermeable sheet, a layer of liquid absorbing material and an inner liquid permeable sheet all united perimetrically, said diaper having a central transversely extending interrupted line of compression whereby the diaper is adapted to be folded on itself to provide a crotch-forming portion in the middle of said interrupted line of compression,

said line having a segment extending in from each longitudinal edge with each segment terminating short of the crotch-forming portion of the diaper,

a first pair of inwardly convergent foreshortened lines of compression associated with each of said segments and disposed at about 45° relative thereto, and a second pair of inwardly convergent foreshortened lines of compression associated with each of said segments and disposed at about 22½° relative thereto, each of said convergent lines of compression extending in from each longitudinal edge but terminating short of the crotch-forming portion



of the diaper and short of the inner end of its associated segment and cooperating with said associated segment to provide a relatively rounded, unstressed crotch-forming portion, said diaper prior to installation on an infant being folded along said interrupted lines and having an infold along each line segment and an infold in said crotch-forming portion, and further having an infold along each first pair convergent line and an outfold along each second pair convergent line,

and means adhering said inner sheet together adjacent each longitudinal edge but spaced inwardly therefrom on opposite sides of each of said first pair of convergent lines of compression.

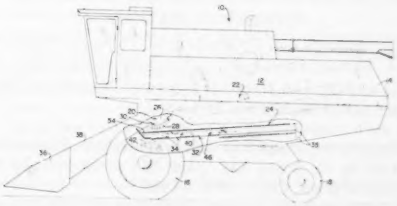
B 330,828
GRAIN PAN BOTTOM DOOR

Paul L. Rouse, Moline, and Robert L. Francis, East Moline, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 8, 1973, Ser. No. 330,828
Int. Cl. A01f *12/30*
U.S. Cl. 130—24 **8 Claims**
Group Art Unit 333

References Cited
UNITED STATES PATENTS

1,682,733	9/1928	Ashton	130/24
2,500,803	3/1950	Cockrell	130/24



1. In a combine harvester of the type having crop harvesting instrumentalities, in combination, a housing enclosing threshing and cleaning apparatus and having a forward material receiving opening, said threshing apparatus including a threshing drum and a cooperating concave in the vicinity of said

material receiving opening, said cleaning apparatus including a grain pan assembly disposed below the level of said concave and including a two-part articulated grain pan proper consisting of two grain pan sections disposed in edge-to-edge relationship and including a generally horizontal rectangular fixed rear section and a rectangular movable forward door section mounted for swinging movement about a transverse horizontal axis in the vicinity of the forward edge of said fixed section between a raised position wherein it lies in the general horizontal plane of said latter section and, in effect, constitutes a continuation thereof, directly underlies said concave in close proximity thereto, and extends across said material receiving opening, and a lowered downwardly inclined position wherein it exposes its upper surface and also exposes the concave, means for releasable securing said movable forward door section in its raised position, said grain pan assembly further includes a pair of parallel elongated side rails between which said fixed grain pan section extends in bridging relationship, a transverse crossbar extending between said side rails in the vicinity of the juncture region between said grain pan sections, hinge means connecting the rear proximate edge of said momvable forward door section to said crossbar, said hinge means comprises an elongated hinge bar secured to said crossbar, said hinge bar establishing an upwardly facing channel, and a hinge pin disposed on the rear transverse edge of said forward door section and removably seated within said channel whereby, when said releasable securing means is released, the door panel may be raised bodily vertically and thus released from the grain pan assembly.

B 306,655

TOBACCO AND TOBACCO SUBSTITUTE MATERIALS INCLUDING METAL CHELATE COMPOUNDS

Theo Eicher; Friedemann Muller, and Klaus-Werner Krebs, all of Dormagen, Germany, assignors to Haarmann & Heimer GmbH, Holzminden, Germany

Filed Nov. 15, 1972, Ser. No. 306,655

Claims priority, application Germany, Nov. 19, 1971, 2157370; Mar. 29, 1972, 2215412

Int. Cl. A24b *15/00, 15/02*

U.S. Cl. 131—2 **22 Claims**

Group Art Unit 336

References Cited

UNITED STATES PATENTS

2,108,860	2/1938	Kauffman	131/265 X
2,171,986	9/1939	Poetschke	131/15 R
3,109,436	11/1963	Bavley et al.	131/262 A
3,459,195	8/1969	Silberman	131/2 X
3,461,879	8/1969	Kirkland	131/2
3,529,602	9/1970	Hind et al.	131/2
3,572,348	3/1971	Norman et al.	131/262 A
3,724,469	4/1973	Reynolds et al.	131/266 X

OTHER PUBLICATIONS

The Chemistry and Technology of Tobacco (Text), by A. A. Shmuk, published by Pishchepromizat, Moscow, 1953 and by The National Science Foundation, 1961, pages 588, 590, 602 and 603 cited.

"Dangerous Properties of Industrial Materials," (Text) by N. Irving Sax, page 888 cited pub. by the Reinhold Book Corp., N.Y. (1968).

1. In a smokable product comprising a cellulose-based combustible material, the improvement which comprises incorporating therein at least one chelate compound of the stoichiometric formula.

$$K_x[Me_zR_y]_w$$

in which

K is an alkaline earth metal or divalent manganese,

Me is trivalent iron or aluminum,

R is the radical of a chelate-forming organic carboxylic acid, and

w, *x*, *y* and *z* are integers up to about 5,

the chelate compound being incorporated in an amount ranging from about 0.5 to 70% by weight of the combustible material.

B 351,883

REMOTE-CONTROLLED VALVE, PREFERABLY FOR PNEUMATIC SAND BLAST UNITS

Soeren Kristian Assersen, Mosevangen 210, 5330, Munkebo, Denmark

Filed Apr. 17, 1973, Ser. No. 351,883

Claims priority, application Denmark, Apr. 20, 1972, 1939/72

Int. Cl. B24c *7/00*

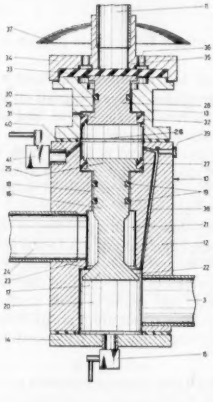
U.S. Cl. 137—596.15 **8 Claims**

Group Art Unit 341

References Cited

UNITED STATES PATENTS

2,583,185	1/1952	McLeod	137/596.15
2,984,218	5/1961	Christianson	137/596.15



1. A valve for remotely controlling the supply of a pressure media to a receiver comprising:

a valve casing containing a control chamber vented to the atmosphere via a bore,

a cover fixed to one end of the valve casing and fixed to a pipe leading to said receiver,

a first piston and a second piston, each contained within the valve casing, each having a piston head facing the control chamber, each piston head having a surface area greater than a corresponding surface at the opposite end of each piston, the first piston opposite end positioned between a pressure entrance chamber, connected to said control chamber by a channel, and a pressure outlet chamber connected to said receiver, the second piston opposite end facing said cover and pipe, and

a flexible diaphragm positioned between said pipe and said second piston opposite end.

B 405,132

PNEUMATICALLY OPERATED PILOT RELAY AND SYSTEM AND DIVERTING RELAY CONSTRUCTION UTILIZING THE SAME OR THE LIKE

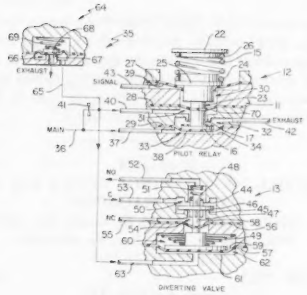
Edward N. Caldwell, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 10, 1973, Ser. No. 405,132
Int. Cl. G05d *23/00*
U.S. Cl. 137—625.5 24 Claims
Group Art Unit 341

References Cited

UNITED STATES PATENTS

3,749,306	7/1973	Mott et al.	236/47



1. A pneumatically operated diverting relay construction comprising a pilot relay means and a diverting valve means operatively associated together, said pilot relay means having means for sending a pneumatic pilot output to said diverting valve means to switch said diverting valve means from one condition thereof to another condition thereof when said pilot relay means receives a pneumatic signal of a certain magnitude, said pilot relay means having means for selecting within limits the magnitude of said pneumatic signal that is required for said pilot relay means to produce said pneumatic pilot output for switching said diverting valve means from said one condition thereof to said other condition thereof, said pilot relay means having means for terminating said pneumatic pilot output to cause said diverting valve means to switch from said other condition thereof to said one condition thereof when said pneumatic signal falls to another certain magnitude, the last named means causing said other certain magnitude to be a fixed differential from said selected magnitude thereof.

B 372,823

DISTRIBUTION VALVE FOR DENTAL EQUIPMENT

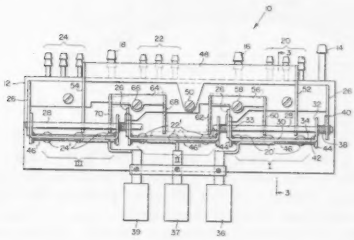
Glen Arthur Woodhams, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed June 22, 1973, Ser. No. 372,823
Int. Cl. F16k *35/14, 31/00, 31/44*
U.S. Cl. 137—637.1 4 Claims
Group Art Unit 341

References Cited

UNITED STATES PATENTS

2,098,682	11/1937	Waro et al.	137/637.1
3,088,490	5/1963	Rockwood et al.	137/637
3,158,178	11/1964	Fiala et al.	251/295
3,348,577	10/1967	Miller et al.	137/637.1
3,473,779	10/1969	Gustafson et al.	251/295
3,476,153	11/1969	Roland	251/295
3,487,853	1/1970	Kern	137/637.1
3,489,390	1/1970	Cadogan	251/295
3,574,308	4/1971	Battersby	137/637
3,726,013	4/1973	Page	32/22
3,779,283	12/1973	Hohulin	137/637



1. A manually operated distribution valve for selecting the simultaneous delivery of a pluralty of utility services to one or another of several dental handpieces wherein operation to deliver the services to one instrument automatically terminates delivery to all other instruments, said valve comprising:

a. a manifold block having a single inlet and a plurality of outlets for each utility service, the outlets being grouped in sets so that each set has one outlet for each service;

b. each outlet being valved and having a valve operating stem extending up through said manifold block said stems being aligned along said manifold block;

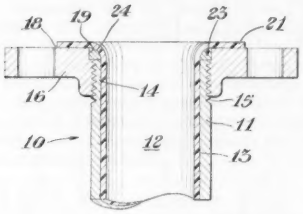
c. a manually operated lever associated with each swt of outlets, said lever being pivoted about an axis located above and along said valve stems;

d. an actuating rod carried by each lever, said rod being moved down and across the valve stems in one set to move the valves therein to an open position when the lever associated with that set is manually pipvoted about its axis; and

e. linkage means betweenn said sets and cooperating with said actuating rods for closing the valves in one set when the valves in another set are opened said linkage means including a plurality of levers, one located between each pair of valve sets so that opening any one set will automatically close another previously open set, each of said levers being generally U-shaped with the base of the U-shape being pivoted to said manifold block and each leg of said U-shape being adapted to engage the actuating rods of adjoining sets.

B 364,786
PROTECTIVE INSERT FOR LINED CONDUIT
Richard E. Pero, 1910 Prairie, Essexbille, Mich. 48732
Filed May 29, 1973, Ser. No. 364,786
Int. Cl. F16l *9/18, 57/00*
U.S. Cl. 138—109 **4 Claims**
Group Art Unit 244
References Cited
UNITED STATES PATENTS

2,451,599	10/1948	Wittse	220/39 R
2,982,311	5/1961	Haskell	138/109 X
3,298,716	1/1967	Taylor	285/55
3,383,750	5/1968	Schroeder et al.	29/159 R
3,453,008	7/1969	Lejeune	138/109 X
3,459,619	8/1969	Maxwell	138/96 X



1. In a lined conduit, the lined conduit comprising a rigid outer casing, the outer casing having at least one end, a conduit flange disposed on and affixed to said end, the conduit having a synthetic resinous thermoplastic liner, the liner adjacent said end additionally forming a generally radially extending liner flange disposed generally adjacent to the conduit flange, the improvement which comprises

an annular inwardly facing groove defined by the junction of the conduit and the conduit flange has an annular insert disposed within the groove, the annular insert having a generally outwardly facing curved surface which provides a generally smooth transition surface between the inner surface of the conduit casing and the conduit flange disposed on said casing, thereby lessening failure of the liner in the region of said junction of the conduit and the conduit flange under service conditions.

B 404,437
DOBBY ACTUATING MECHANISM FOR MULTI-FILLING INSERTION
David W. Morris, Slatersville, R.I., assignor to Rockwell International Corporation, Pittsburgh, Pa.
Filed Oct. 9, 1973, Ser. No. 404,437
Int. Cl. D03d *47/38*
U.S. Cl. 139—122 W **3 Claims**
Group Art Unit 352
References Cited
UNITED STATES PATENTS

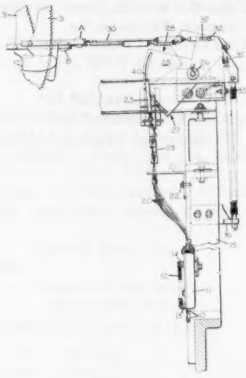
3,286,738	11/1966	Golobart	139/122 W
3,439,715	4/1969	Juillard	139/122 W

1. A dobby controlled weft yarn selecting system for use with a shuttleless loom to present yarn from a stationary source to a preselected location for insertion into a warp shed, said system comprising:

a. a plurality of yarn engaging elements for moving the yarns between active and inactive positions;

b. actuating cables connected at one end to said yarn engaging elements;

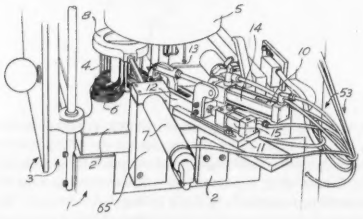
c. control cables connected at one end to the dobby; and



d. a lever member pivotable between a lower active position and an upper inactive position having means for slidably and operatively connecting the free ends of said actuating cables to the free ends of said control cables whereby a selected yarn engaging element is delayed in its movement into and from the active position.

B 441,024
INTERPOLE LOOP CONTROL DEVICE FOR COIL WINDING MACHINES
Vernon E. Kieffer, 13356 Amiot, St. Louis, Mo. 63141
Filed Feb. 11, 1974, Ser. No. 441,024
Int. Cl. B21f *3/04*
U.S. Cl. 140—92.1 **13 Claims**
Group Art Unit 321
References Cited
UNITED STATES PATENTS

3,628,238	12/1971	Hill	140/92.1
3,672,040	6/1972	Arnold	140/92.1
3,714,973	2/1973	Kieffer et al.	140/92.1
3,750,718	8/1973	Sedgewick	140/92.1



1. In a device for winding a plurality of wire turns into at least two interconnected coil sets, each of said coil sets defining a pole for dynamoelectric machine, including means for holding each coil set after it is wound, the improvement comprising means for preventing formation of interpole loops in the interconnection between said coil sets, said loop preventing means including means for grasping the most recently wound coil set upon the completion of winding said coil set, said grasping means being movable in two planes, said grasping means holding the wire turns comprising said last men-

tioned coil set until at least a portion of the plurality of turns forming the next sequential coil set is wound.

12. A loop control device for use in a coil winding machine comprising:

a base;

a first structure movably mounted to said base, said first structure having a first end and a second end;

power means mounted to said base and operatively connected to said first structure;

means mounted to the first end of said first structure for rotation in an arcuate path; and

second power means mounted to said first structure and operatively connected to said arcuately rotationally mounted means.

B 150,560

PNEUMATIC TIRES

Tom French, Sutton Coldfield, England, assignor to Dunlop Holdings Limited, London, England

Filed June 7, 1971, Ser. No. 150,560

Claims priority, application Great Britain, June 20, 1970, 30032/70

Int. Cl. B60c *7/00*

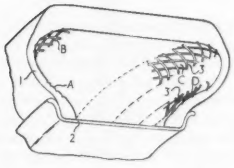
U.S. Cl. 152—330 **10 Claims**

Group Art Unit 311

References Cited

UNITED STATES PATENTS

3,115,921	12/1963	Leibee	152/352
3,143,155	8/1964	Knox	152/330
3,299,934	1/1967	Pace	152/354
3,392,772	7/1968	Powers	152/352
3,610,308	10/1971	McDonald	152/353 A



1. A pneumatic tire and wheel assembly capable of being run in a deflated condition comprising:

a. a wheel rim having a pair of annular flanges;

b. a pneumatic tire mounted on the wheel to define an inflation chamber and having a tread portion with a width greater than the width of the wheel rim measured between the flanges;

c. means to prevent the tire from becoming dislodged from the wheel rim when running deflated;

d. the entire interior surface of the tire and the inflation chamber being free of intermediate supporting structure so that when the assembly is run deflated, opposed internal surfaces of the tire come into contact;

e. a plurality of lubricant retaining portions recessed into said internal surface in at least one localized region thereof in which a lubricant material can be held so that opposed internal surfaces when brought into contact can be lubricated during rotation of the tire under load.

B 364,334

PNEUMATIC TIRE FOR VEHICLE WHEELS

Giorgio Tangorra; Italo Bertelli, and Giovanni Calori, all of Milan, Italy, assignors to Industrie Pirelli S. P. A., Milan, Italy

Filed May 29, 1973, Ser. No. 364,334

Claims priority, application Italy, May 31, 1972, 25140172

Int. Cl. B60c *15/02, 17/00*

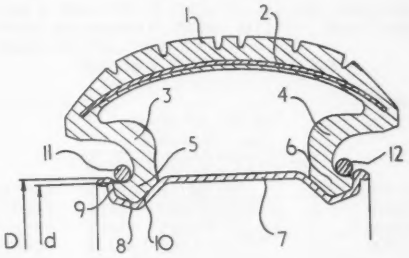
U.S. Cl. 152—375 **2 Claims**

Group Art Unit 311

References Cited

UNITED STATES PATENTS

817,957	4/1906	Christy	152/395
957,413	5/1910	Constantin	152/379
1,195,512	8/1916	Schwarz	152/395
1,277,516	9/1918	Williams	152/375



1. A pneumatic tire and wheel assembly comprising

a tire provided with a tread portion, two bead portions, and two sidewalls, the section midlines of said sidewalls having a concavity turned towards the outside,

a wheel for mounting said tire, said wheel having channel-shaped seat portions, with a supporting base and two lateral walls extending along the entire circumference of the rims of said wheel, each bead portion of said tire being seated in a corresponding seat of the rims of said wheel, and

a circumferentially extending annular element mounted on each of said rims, at least a part of the axially outermost zone of said bead portion being radially compressed between the base of said channel-shaped seat and said annular element, the radially innermost diameter of said annular element being smaller than the radially outermost diameter of the axially outer lateral walls of said seat portion of said rims, said annular element comprising at least one shaped metallic element of curcular section embedded in a shaped rubber element, the cross section of said annular element being positioned eccentrically with respect to that of said shaped rubber element, said shaped rubber element being provided with an appendix intended to be received in an appropriate groove on the radially outer surface of the bead, said groove extending along the whole circumferential development of the bead.

B 337,442

ADJUSTABLE PLATE MOLD FOR CONTINUOUS CASTING

Markus Schmid, Zurich, Switzerland, assignor to Concast A.G., Zurich, Switzerland

Filed Mar. 2, 1973, Ser. No. 337,442

Claims priority, application Switzerland, Mar. 3, 1972, 003114/72

Int. Cl. B22d 11/00

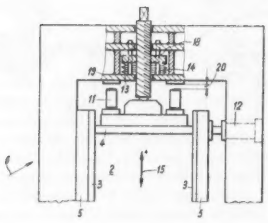
U.S. Cl. 164—280 7 Claims

Group Art Unit 322

References Cited

UNITED STATES PATENTS

2,893,080	7/1959	Goss	164/280
3,015,862	1/1962	Rustemeyer et al.	164/277
3,292,216	12/1966	Colombo	164/273 R
3,710,845	1/1973	Burkhardt et al.	164/273
3,735,801	5/1973	Burkhardt	164/273 R
3,777,436	12/1973	Bode, Jr.	164/273 R



7. In an adjustable plate mold for continuous casting, comprising a support frame having at least one stop surface, a mold formed by longitudinal walls and transverse walls clamped between the longitudinal walls for limiting a mold compartment thereof, said longitudinal walls and transverse walls being supported by the support frame, adjustment means provided for at least one of the transverse walls, said adjustment means being supported by the support frame, said adjustment means being connected with said at least one transverse wall and with the support frame, exchangeable stop gauge means provided between said at least one transverse wall and the stop surface, and coupling means provided for said adjustment means for interrupting the connection between said at least one transverse wall and the support frame, said coupling means during the casting operation allowing for movement of said at least one transverse wall with respect to the stop surface in the direction of the mold compartment and back again.

B 390,679

MARINE RISER ASSEMBLY

William W. Todd, Stavanger, Norway; William T. Ilfrey, and James R. Lloyd, both of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Aug. 22, 1973, Ser. No. 390,679

Int. Cl. E21b 7/12

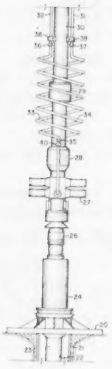
U.S. Cl. 166—.5 9 Claims

Group Art Unit 354

References Cited

UNITED STATES PATENTS

3,189,098	6/1965	Haeber	166/.6
3,330,340	7/1967	Hayes et al.	166/.6
3,701,551	10/1972	Morgan	166/.5 X
3,718,183	2/1973	Scott	166/.5



1. A marine riser assembly for use in offshore drilling operations which comprises a riser pipe, a ball joint in said riser pipe near the lower end thereof, and steel kill and choke lines extending down said riser pipe to points below said ball joint, said kill and choke lines being attached to said riser pipe at points above said ball joint and including helical sections which extend around said ball joint and adjacent portions of the riser pipe above and below said joint through an angle of at least about 360° and contain coils having inside diameters from about 1.25 to about 4 times the outside diameter of said ball joint.

B 295,770
RECOVERY PROCESS FOR A RESERVOIR HAVING A GAS SATURATION

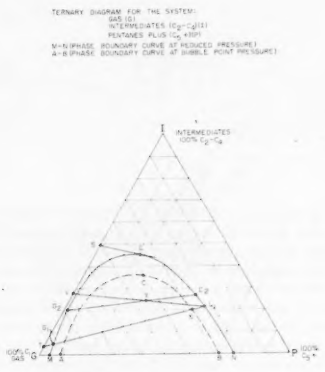
William Bernard Braden, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 6, 1972, Ser. No. 295,770
Int. Cl. E21b *43/16*
U.S. Cl. 166—274 **18 Claims**
Group Art Unit 354

References Cited

UNITED STATES PATENTS

2,880,801	4/1959	Crump	166/266
3,096,821	7/1963	Dyes	166/273
3,126,951	3/1964	Santourian	166/274
3,134,433	5/1964	Bocquet	166/273
3,157,230	11/1964	Connally et al.	166/274
3,249,157	5/1966	Brigham et al.	166/273



1. A process for recovering hydrocarbons from a hydrocarbon-bearing reservoir having a hydrocarbon liquid phase and a gas saturation, transversed by at least one injection well and one production well comprising the steps of:

a. determining the composition of a gaseous hydrocarbon mixture that enriches the said hydrocarbon liquid phase with intermediates of said gas mixture, without miscibility, at the temperature and pressure of said reservoir,

b. injecting into said reservoir via said injection well a slug of said gaseous hydrocarbon mixture in an amount sufficient to establish a transition zone to enrich said liquid phase and increase the volume and decrease the viscosity of said liquid phase,

c. injecting into said reservoir a drive fluid at a pressure and in an amount sufficient to maintain a drive of said slug and said reservoir hydrocarbons toward said production well, and

recovering said hydrocarbons via said production well.

10. A process for recovery of hydrocarbons from a hydrocarbon-bearing reservoir, said reservoir being traversed by at least one injection well and one production well, comprising the steps of:

a. producing said reservoir by pressure depletion to a pressure at which a gas saturation and a hydrocarbon liquid phase are established in said reservoir,

b. determining the composition of a gaseous hydrocarbon mixture that enriches the said hydrocarbon liquid phase with intermediates of said gas mixture, without miscibility, at the temperature and pressure of said reservoir,

c. injecting into said reservoir via said injection well a slug of said gaseous hydrocarbon mixture in an amount sufficient to establish a transition zone to enrich said liquid phase and increase the volume and decrease the viscosity of said liquid phase,

d. injecting into said reservoir a drive fluid at a pressure and in an amount sufficient to drive said slug and said hydrocarbons toward said production well and,

e. recovering said hydrocarbons via said production well.

B 251,345
REDUCTION OF WATER PRODUCTION FROM HYDROCARBON CONTAINING SUBSURFACE FORMATIONS

Dustin L. Free, 2121 E. Skelly Dr., Apt. 240, Tulsa, Okla. 74105, and Howard M. Phillips, 3111 N.W. 26th St., Oklahoma City, Okla. 73107

Filed May 8, 1972, Ser. No. 251,345
Int. Cl. E21b *33/138, 43/27*
U.S. Cl. 166—281 **10 Claims**
Group Art Unit 354

References Cited

UNITED STATES PATENTS

3,087,543	4/1963	Arendt	166/295
3,308,885	3/1967	Sandiford	166/295
3,421,584	1/1969	Eilers et al.	166/295
3,500,929	3/1970	Eilers et al.	166/295
3,613,790	10/1971	Stout et al.	166/295 X
3,687,200	8/1972	Routson	166/295 X
3,757,863	9/1973	Clampitt et al.	166/270 X
3,762,476	10/1973	Gall	166/294

1. In the method of treating a subsurface oil and water-producing interval of a formation located adjacent to a well bore to decrease the volume ratio of water to oil produced thereform wherein an aqueous solution of a partially hydrolyzed polyacrylamide, said solution being substantially free of a crosslinking agent for said polyacrylamide, is injected into the producing formation and then producing fluids from said formation, the improvement which comprises:

crosslinking the polymer after it is introduced into the formation and prior to producing fluids from the treated formation by contacting said polymer with an aqueous solution containing a water soluble salt of a di or trivalent metal cation or an organic crosslinking agent.

9. In the method of treating a producing interval of a subsurface formation producing both a fluid hydrocarbon and water wherein an aqueous solution of polyacrylamide is injected into the producing interval through a well bore, the improvement which comprises:

a. selectively acidizing the producing interval to increase the injectivity thereof;

b. injecting into the producing interval from the borehole an aqueous solution of partially hydrolyzed polyacrylamide;

c. flushing well bore to remove any polyacrylamide solution therefrom;

d. injecting into the producing interval treated with the solution of polyacrylamide an aqueous solution of a crosslinking agent;

e. shutting the producing interval in for a period of time sufficient to crosslink the polymer; and

f. returning the well to production.

B 359,540

BURSTING DISC ASSEMBLY

John Hamilton, and Leslie Ernest Medlock, both of Stevenston, Scotland, assignors to Imperial Chemical Industries Limited, London, England

Filed May 11, 1973, Ser. No. 359,540
Claims priority, application Great Britain, May 22, 1972, 23884/72
Int. Cl. A62c *35/08*; F16k *13/06*
U.S. Cl. 169—28 8 Claims
Group Art Unit 312

References Cited

UNITED STATES PATENTS

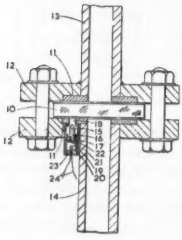
1,933,694	11/1933	Allen et al.	169/26 X
2,780,389	2/1957	Sandgren	137/68 UX
3,288,992	11/1966	Matsudaira et al.	137/68 X
3,494,370	2/1970	Wahl et al.	137/68
3,633,596	1/1972	Gerber	137/68
3,726,344	4/1973	Rothman et al.	169/19 X
3,731,948	5/1973	Risko	137/68 X

FOREIGN PATENTS OR APPLICATIONS

567,120	1/1945	Great Britain	137/71
693,636	7/1953	Great Britain	137/71
825,245	11/1937	France	169/26

OTHER PUBLICATIONS

Encyclopaedia Britannica (1957 Edition), Vol. 10, title page (front and back) and page 407, received in U.S. Pat. Office Scientific Library on May 2, 1957.



1. A fast-acting fluid delivery system comprising

a. two fluid conduits arranged for fluid delivery along a path therebetween,

b. a frangible disc of glass, of the type which shatters rapidly and completely if the surface skin is pierced, said disc having two faces joined by a peripheral edge,

c. means for mounting said frangible disc of glass directly between said fluid conduits so that a face of said disc prevents fluid delivery along said path,

d. a movable spike pointing towards said frangible disc,

e. gas supply means for providing gas to act upon said spike to force it against said disc to rupture the surface layer thereof thereby shattering said disc and allowing fluid delivery between said fluid conduits, along said path, and

f. means for mounting said movable spike for movement against said disc along a path all of which lies fully outside said path of fluid delivery between said fluid conduits.

B 365,490

CABLE CONTROLLED DRAFT LOAD AND POSITION SENSING LINKAGE

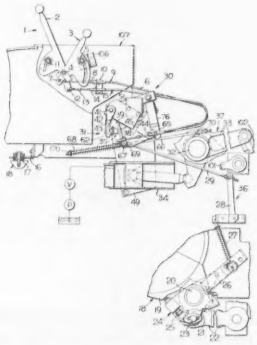
Robert J. Wagner, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 31, 1973, Ser. No. 365,490
Int. Cl. A01b *63/112*
U.S. Cl. 172—9 14 Claims
Group Art Unit 337

References Cited

UNITED STATES PATENTS

2,974,733	3/1961	Fletcher	172/7
3,575,241	4/1971	McKeon et al.	172/7



1. A control mechanism on a tractor adapted for operating a hydraulic valve of a hydraulic weight distribution system comprising, valve actuating means, implement hitching means adapted for connection to an implement, manual control means including at least one of an implement position control and a draft load control, at least one of draft load sensing means and implement position sensing means connected to said implement hitching means, at least one pair of flexible elements including a guided element and a guiding element slidably movable relative to each other, means connecting the first of said flexible elements between said manual control means and said valve actuating means for adjustably positioning said valve actuating means, valve compensating means connected to said valve actuating means, means connecting at least one of said draft control sensing means and said position control sensing means through the second of said flexible elements to said valve compensating means to thereby provide a compensating movement to said valve compensating means to modify the movement of said valve actuating means during valve actuation.

B 377,869

DRAFT CONTROL LINKAGE FOR A TRACTOR

Otto Mueller, Jr., Detroit, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Continuation of Ser. No. 189,662, Oct. 15, 1971, abandoned. This application July 9, 1973, Ser. No. 377,869

Int. Cl. A01b *63/112*

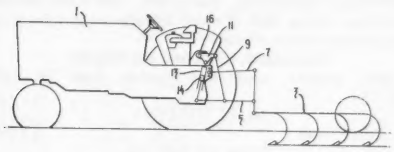
U.S. Cl. 172—9 5 Claims

Group Art Unit 337

References Cited

UNITED STATES PATENTS

2,921,638	1/1960	Du Shane	172/9
3,120,278	2/1964	Ashfield et al.	172/9
3,194,319	7/1965	Faupe	172/9
3,314,484	4/1967	Bunting et al.	172/9
3,331,447	7/1967	Simak	172/9
3,409,087	11/1968	Schneider	172/7



1. In a tractor having draft linkage for connecting the tractor to an implement, hydraulic means including valve means for controlling the vertical position of the draft linkage, draft sensing means for measuring changes in draft loads in the draft linkage, means for operating the valve means in accordance with changes in the draft loads to condition the valve means to raise, hold or lower the implement, operator-set draft input means, a draft control linkage interconnecting the draft sensing means, the operator set draft input means and the valve operating means so that changes in draft forces in the draft linkage from a value set by the operator-set draft input means will condition the valve means to hold or lower the linkage to establish and maintain said set value, the valve operating means including a reciprocable control rod operatively connected to the valve means characterized by said draft control linkage comprising a first member pivotable about a first fixed axis by said operator set draft input means, a second member operatively connected to the control rod and pivotally mounted on said first member on a second movable axis spaced from the fixed axis, said draft sensing means operatively connected to the second member to rotate it about the second axis.

3. In a tractor having draft linkage for connecting the tractor to an implement, hydraulic means including valve means for controlling the vertical position of the draft linkage, draft sensing means for measuring changes in draft loads in the draft linkage, means for operating the valve means in accordance with changes in the draft loads to condition the valve means to raise, hold or lower the implement, operator-set draft input means, a draft control linkage interconnecting the draft sensing means, the operator set draft input means and the valve operating means so that change in draft forces in the draft linkage from a value set by the operator-set draft input means will condition the valve means to hold or lower the linkage to establish and maintain said set value, second operator-set maximum depth position input means, position sensitive means responsive to the vertical position of the draft linkage, the valve operating means including a control rod characterized by a floating lever pivotally connected to the control rod at a first location, the position sensitive means pivotally connected to the lever at a second location and the second operator-set maximum depth means connected to the floating lever at a third location.

B 351,535

TRAIL SCRAPER

Lucien Hendrichon, 373 St. Paul St., Vill de St. Gabriel, Berthier, Quebec, Canada

Filed Apr. 16, 1973, Ser. No. 351,535

Int. Cl. A01b *49/02, 19/04;* E01h *4/00*

U.S. Cl. 172—146 1 Claim

Group Art Unit 337

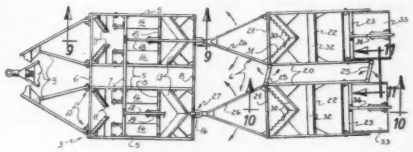
References Cited

UNITED STATES PATENTS

126,186	4/1872	Cordill	172/623
153,214	7/1874	Burgess	172/623
239,835	4/1881	Parmley	172/176 X
286,969	10/1883	Smith	37/13
686,559	11/1901	Todd	172/145 X
768,170	8/1904	Dorsett	172/146
835,935	11/1906	Campany	172/623
836,540	11/1906	Smith	172/198 X
1,018,785	2/1912	Shank	172/767
1,138,024	5/1915	Steinfort	172/767 X
1,297,430	3/1919	Winslow	172/197 X
1,368,585	2/1921	Vigil	172/145
1,404,038	1/1922	McCallum	172/145
1,429,376	9/1922	Stephenson	172/200
1,522,331	1/1925	Schaeffer	172/393
1,588,152	7/1926	Wammack	172/197 X
1,861,494	6/1932	Devereux	172/199
1,962,990	7/1934	Katzenberger	172/145
2,786,283	3/1957	Bradley	172/145 X
3,023,717	3/1962	Cline	172/146 X
3,200,891	8/1965	Marron	172/197 X
3,333,645	8/1967	Gustafson	172/413 X
3,576,214	4/1971	Ratcliffe	172/393
3,739,859	6/1973	White	172/145

FOREIGN PATENTS OR APPLICATIONS

528,664	8/1955	Italy	172/623



1. A trail scraper comprising a front unit and a pair of rear units, said rear units disposed side by side and trailing said front unit, said front unit including a pair of chassis rigidly joined together in laterally spaced-apart relationship, a scraping assembly and a levelling assembly rigidly secured to each of said chassis of said front unit and operatively projecting underneath thereof, said scraping assemblies of said front unit each including scraping members projecting transversely inwardly and rearwardly towards each other, and funneling scraped material towards the levelling assemblies of said front unit and runners secured to said front unit transversely adjacent the opposite sides, respectively of each of said chassis of said front unit and having upturned front ends for sliding over oncoming obstacles for raising said front unit for sliding thereof over said obstacles, each of said rear units comprising a chassis, a scraping assembly and a levelling assembly trailing said scraping assembly, both assemblies rigidly secured to said chassis of each rear unit and operatively projecting underneath thereof, said last-named scraping assembly including scraping members projecting transversely inwardly and rearwardly towards each other symmetrically relative to the longitudinal central axis of said chassis of each rear unit and operatively inwardly funneling scraped material towards said trailing levelling assembly, and a compaction assembly trailing said levelling assembly of each rear unit and including a panel having an upwardly curved front end portion pivoted to said chassis of each rear unit about a transverse axis and a com-

pacting planar portion projecting rearwardly from said front end portion, hinge means joining said rear units to said front unit and defining pitch and yaw pivot axes for each of said rear units relative to said front unit, connecting means laterally joining said chassis of said rear units together side by side, said connecting means including elongated pivots upwardly carried by said chassis of said rear units, and a pair of bars pivotally and slidably connected at their opposite ends to said elongated pivots and arranged in spaced parallel relationship holding said rear units in parallel spaced-apart relationship relative one to the other and allowing up and down displacement between said rear units and said bars, and an adjustable linkage operatively connected to each compaction panel of each rear unit and to the corresponding chassis of the rear unit and arranged for pivotal adjustment of the associated compaction panel, each of said adjustable linkages including a first lever pivotally connected to the corresponding chassis and angularly adjustable relative to the latter chassis and a second lever pivotally connected at one end to the corresponding first lever, and at the other end to the corresponding compaction panel rearwardly of the corresponding transverse pivot axis and arranged to produce said pivotal adjustment.

B 284,427

GARDEN TOOL

Joseph L. Lucan, 16545 Armstead St., Granada Hills, Calif. 91344

Filed Aug. 28, 1972, Ser. No. 284,427
Int. Cl. A01b 1/20
U.S. Cl. 172—375 **6 Claims**
Group Art Unit 337

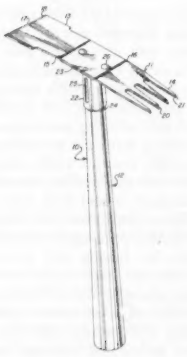
References Cited

UNITED STATES PATENTS

120,143	10/1871	Wright	172/375
332,350	12/1885	Kretsinger	172/375
538,146	4/1895	Bailey	172/375 X
1,148,534	8/1915	Pringle	172/375
1,557,894	10/1925	Sturgis	306/22 X
2,040,751	5/1936	Marseilles	172/375
2,752,179	6/1956	LeFebvre	302/22 X

FOREIGN PATENTS OR APPLICATIONS

247,625	8/1945	France	172/375



1. A gardener's hand tool, comprising:

a. a head member, said head member having a blade, intermediate and tine sections, said tine section including a plurality of tines, each of said tines being relieved on the under side of said tine so as to provide the space between said tines with a wedge-shaped cross-section;

b. a handle, said handle being provided with a tapered configuration;

c. a ferrule, said ferrule being provided with a tapered configuration and fitting over a portion of said handle and being firmly attached to said handle; and

d. a flange member attached to said ferrule, said flange member having one side attached to one end of said ferrule and the opposite side attached to the intermediate section of said head member so as thereby to attach said handle to said head member, said intermediate section and said flange member being disposed at an angle of substantially 90° to said handle, said blade section and said tine section being disposed on opposite sides of said intermediate section, said blade section and said tine section being disposed at a predetermined angle to said intermediate section.

B 368,081

COMBUSTION ENGINE DRIVEN HAMMER MACHINES

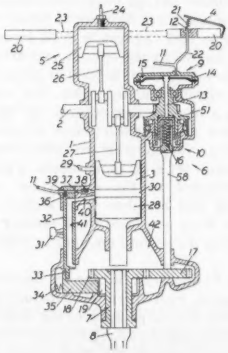
Kurt Osten Brannstrom, Saltsjo-Boo, and Levi Johannes Karlfors, Nacka, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed June 8, 1973, Ser. No. 368,081
Claims priority, application Sweden, June 30, 1972, 8601/72
Int. Cl. B25d 9/10
U.S. Cl. 173—48 **5 Claims**
Group Art Unit 354

References Cited

UNITED STATES PATENTS

1,938,080	12/1933	McCollum	192/.07 X
1,996,256	4/1935	Price et al.	192/.07 X
2,923,280	2/1960	Kaeitani	173/76 X
3,570,608	3/1971	Erma	173/139



1. A device relating to combustion engine driven hammer machines and comprising a machine housing, a crankshaft which is arranged in the machine housing and connected to a compressor piston and driven by a combustion engine, a throttle controlling said engine, a device comprising a servomotor, which is controlled in dependence on the position of the throttle, for transferring rotation from the crankshaft to a drill-sleeve for rotating a tool which is inserted into the drill-sleeve, and a clutch unit which is actuated by the servomotor for engagement or disengagement of the rotation.

5. A device according to claim 1, in which a function selector comprising an essentially cylindrical part, which is guided in the machine housing and provided with, an eccentric first terminal for actuating a spring-loaded dog for barring the

drill-sleeve against rotation when the function selector is in a certain adjustment position, and a second-terminal which is made as a slide-valve for blocking the transferring of fluid-pressure, created by the compressor piston, to the servomotor when the function selector is in said adjustment position, through which the rotation remains disengaged independent of the adjustment of the throttle.

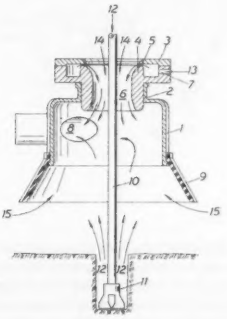
B 286,614
METHOD AND DEVICE FOR DUST COLLECTING AIR-FLUSHED ROCK DRILLING

Dick Axel Horlin, Handen, and Klas Goran Gunnarsson Ek, Tyreso, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Sept. 5, 1972, Ser. No. 286,614
Claims priority, application Sweden, Sept. 8, 1971, 11355/71
Int. Cl. E21b *21/00;* **E21c** *7/02*
U.S. Cl. 175—209 **12 Claims**

Group Art Unit 354
References Cited
UNITED STATES PATENTS

1,850,317	3/1932	Dikant	175/209
1,985,157	12/1934	Friedman et al.	175/213 X
2,041,690	5/1936	Baumeister et al.	175/209 X
2,144,586	1/1939	Kelley	175/209 X
2,183,262	12/1939	Kelley	175/209
2,201,270	5/1940	McIntyre	175/213 X
2,590,958	4/1952	Goodrich	175/209
2,712,921	7/1955	Redman	175/212 X
2,730,333	1/1956	Lenhart et al.	175/212 X
2,730,335	1/1956	Lamprecht	175/209



1. Device for dust collecting during air-flushed rock drilling characterized by the combination of:

a shell adapted to be located adjacent the rock surface, said shell being open at its forward end and being provided with a drill stem opening at its rear end, the drill stem opening of the shell being dimensioned to form an annular space around a drill stem to be inserted therein,

an air ejector provided at the rear end of the shell and including an annular slot through which pressure air is injected in a substantially radial direction, and a neck ring provided with a curved contour for linking the injected air flow forwards, through the annular space, said neck ring having a minimum internal diameter which is smaller than the diameter of said annular slot, said air ejector producing a forwardly directed air flow toward the rock surface through said annular space to aerodynamically retard the flow rate of the dust-containing flush-air rushing out of the hole being drilled, and

an outlet opening in said shell which is adapted to be connected to a suction device for draining of the air and dust from the shell.

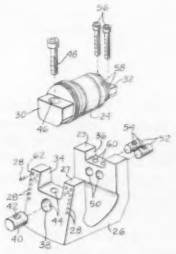
B 300,353
RAISE BORING HEAD AND ROLLING CUTTER ARRANGEMENT THEREFOR

Robert D. Goodfellow, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed Oct. 17, 1972, Ser. No. 300,353
Int. Cl. E21b *9/08;* **E21c** *23/00*
U.S. Cl. 175—364 **1 Claim**

Group Art Unit 354
References Cited
UNITED STATES PATENTS

2,695,771	11/1954	Salvatori	175/346
3,385,385	5/1968	Kucera et al.	175/374
3,461,983	8/1969	Hudson et al.	175/375
3,601,207	8/1971	Coski	175/364
3,638,740	2/1972	Justman	175/53
3,705,635	12/1972	Conn	175/364
3,749,188	7/1973	Schumacher	175/364
3,750,772	8/1973	Venter	175/374 X



1. In a rolling cutter; a rotatable outer part, a central support shaft rotatably supporting said outer part and having end portions projecting axially beyond the respective ends of said outer part, saddle means having generally parallel legs fixed relative to each other and spaced to receive said rotatable part therebetween, a slot extending into one end of each said leg part and each having spaced parallel side walls and a bottom wall perpendicular to the side walls, each end portion of said central support shaft being receivable into a respective slot and having flat parallel sides engaging the side walls of the slot and a flat bottom perpendicular to said sides and engaging the bottom wall of the respective slot, each said leg having at least one hole extending therethrough in a direction substantially parallel to said support shaft and spaced downwardly in the respective leg from said bottom wall of said slot, a barrel nut removeably mounted in each hole, and a bolt for each barrel nut extending downwardly through the end portion of the support shaft which is disposed above the nut and downwardly through the portion of the respective leg disposed between the bottom wall of the slot and the said hole in which the barrel nut is mounted and threadedly engaging the barrel nut whereby each said end portion is fixed in the respective slot and clamped against the bottom wall thereof.

B 352,934

SNOWMOBILE SUSPENSION SPRING ADJUSTMENT

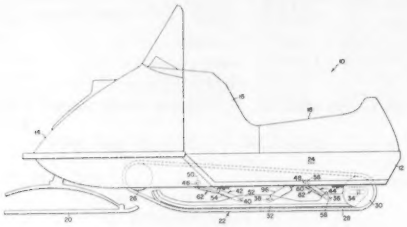
Thomas Herbert Lohr, and Stephen Clair Scholten, both of Horicon, Wis., assignors to Deere & Company, Moline, Ill.

Filed Apr. 20, 1973, Ser. No. 352,934
Int. Cl. B62m 27/02
U.S. Cl. 180—5 R 6 Claims
Group Art Unit 316

References Cited

UNITED STATES PATENTS

2,444,759	7/1948	Swennes	305/27
3,494,438	2/1970	Rose	180/5 R
3,613,811	10/1971	Brandli	180/5 R
3,706,481	12/1972	Kramer	180/5 R
3,721,308	3/1973	Brandli	180/5 R



1. In a snowmobile of the type including a main longitudinal frame including laterally spaced generally vertical sidewalls partially defining a longitudinal cavity in the underside of the frame, a drive sprocket means mounted at a forward location in the cavity for rotation about a transverse horizontal axis, an endless track trained about the drive sprocket means and having upper and lower runs respectively located in and below said cavity, track-engaging member means located between said upper and lower runs and downwardly biased suspension means linking said track-engaging member means to said main frame for vertical movement relative thereto and for biased engagement with said lower run of the track, the improvement comprising: said suspension means including at least one link having opposite ends respectively pivotally connected to said main frame and to said track-engaging member means for permitting the latter to travel vertically relative to the main frame; at least one longitudinally extending adjusting arm positioned against one of said sidewalls and having one end pivotally connected to said main frame for permitting said arm to swing vertically coaxially with said link; a torsion spring having a plurality of helically wound coils mounted coaxially about the axis of the pivotal connection of said arm with the main frame; said coil spring having a first terminal end portion extending alongside said arm and received in a spring-retaining groove defined by a surface portion of the arm adjacent an end thereof and said coil spring having a second terminal end portion extending alongside said link and engaging a surface portion of the link intermediate the ends thereof; said one of said sidewalls having a bottom edge defined by a generally horizontal flange; adjustable connecting means connected to said flange and including an adjusting bolt projecting upwardly through said arm adjacent said end thereof and having a wrench-engageable head located below the level of the flange whereby the force exerted by said torsion spring may be increased and decreased respectively in response to the adjusting arm being adjusted to positions angularly closer to and further from the link through means of the adjusting bolt.

B 327,674

REMOVABLE SIDE PANEL

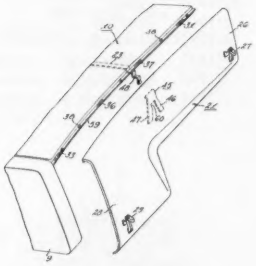
Robert C. Haupt, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jan. 29, 1973, Ser. No. 327,674
Int. Cl. B62d 25/12
U.S. Cl. 180—69 R 10 Claims
Group Art Unit 316

References Cited

UNITED STATES PATENTS

1,992,496	2/1935	Marmon et al.	180/69 R
2,584,329	2/1952	Clapper	180/54 A
2,733,772	2/1956	Lamb	180/69 R
2,882,089	4/1959	Vaszin	180/69 R X
2,967,324	1/1961	Gagnier	180/69 R X
3,123,380	3/1964	Grim et al.	280/477 UX
3,207,250	9/1965	Bamford	180/54 AX
3,270,462	9/1966	Obadal et al.	180/69 UX
3,743,045	7/1973	Hansen	180/69 R
3,754,614	8/1973	Habas	180/69 C



1. A removable side panel on an engine hood of a tractor comprising, a vehicle chassis, an engine hood, a front engine hood support means for said engine hood supported on said chassis including, a grill means supporting the forward end of said hood, and a radiator rearwardly of said grill means supporting a portion of said hood and defining an accessory compartment forward of the engine with an access opening on the side of said tractor, a rear engine hood support means defining an engine compartment with the rear portion of said front engine hood support means rearwardly of said radiator with a second access opening on the side of said tractor, a removable side panel extending substantially the length of the engine compartment and the accessory compartment removably supported on said engine hood, said hood including a mounting portion for mounting said side panel, an upper supported edge portion on said side panel for supporting said side panel on said engine hood, hook and slot means interconnecting said side panel with said hood, alignment means including guiding means on said engine hood and guided means on said panel to facilitate mounting said side panel on said engine hood, latch means removably fastening said side panel on the side of said tractor permitting removal of said panel to thereby provide complete access to said accessory compartment and said engine compartment through said access openings.

B 310,149

POWER STEERING MECHANISM

Masakazu Sugisawa, Hekinan, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi Pref., Japan

Filed Nov. 28, 1972, Ser. No. 310,149
Claims priority, application Japan, Dec. 8, 1971, 46-099186; Dec. 8, 1971, 46-099187
Int. Cl. B62d *5/10*
U.S. Cl. 180—79.2 R 16 Claims
Group Art Unit 316

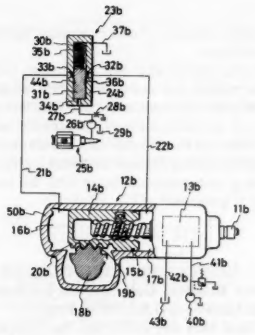
References Cited

UNITED STATES PATENTS

3,365,015	1/1968	Cadiou	180/79.2 R
3,693,747	9/1972	Nishikawa	180/79.2 R

FOREIGN PATENTS OR APPLICATIONS

1,035,686	7/1966	Great Britain	180/79.2 R



1. A power steering mechanism comprising,

a housing provided with a cylinder,

a piston fitted within said cylinder for axial sliding movement therein, operably connected to a steering wheel and defining a pair of opposed fluid chambers within said cylinder,

a sector mounted within said cylinder for operative connection with steering road wheels of a vehicle and operatively connected to said piston,

a reservoir for a fluid,

a pump for the fluid,

a changeover control valve for selectively connecting said reservoir through a first passageway to one of said fluid chambers and said pump through a second passageway to the other of said fluid chambers depending on the direction of turning of the steering wheel to provide an assist for turning said steering road wheels,

a third passage means connecting said two fluid chambers together,

at least one fluid control valve disposed within said third passage means, and

means for opening said at least one fluid control valve in proportional response to increases in at least one operational characteristic of the vehicle while in motion to decrease the assist for turning the steering road wheels.

B 387,331

VEHICLE INSTRUMENT PANEL COVER ASSEMBLY

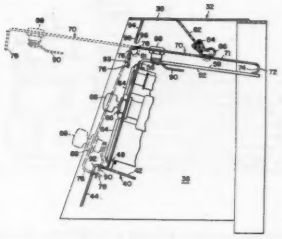
Lary Lynn Williams, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 10, 1973, Ser. No. 387,331
Int. Cl. B60k *37/00*
U.S. Cl. 180—90 17 Claims
Group Art Unit 312

References Cited

UNITED STATES PATENTS

1,382,907	6/1921	Hatch	312/323
2,049,080	7/1936	Pickup	312/322 X
3,302,743	2/1967	Mosquera	180/90
3,446,546	5/1969	D'Adamo	312/323
3,452,835	7/1969	Deli et al.	180/90
3,557,897	1/1971	Conner et al.	180/90



1. In a vehicle of a type including a seat, an instrument panel support structure spaced forwardly of the seat and a generally upright instrument panel including upper, lower and opposite side edges and being spaced forwardly of the seat and supporting a plurality of instruments positioned so as to be in the line of sight of a forwardly facing operator seated in the seat, an instrument panel cover assembly, comprising: cover support means forming part of said panel support structure and having upwardly facing, substantially planar slide surface means extending forwardly from and generally perpendicular to said instrument panel adjacent one of said upper and lower edges thereof; an instrument panel cover having a central planar portion dimensioned for covering said instrument panel; said panel cover including first and second end portions at opposite sides of said central planar portion; said panel cover having a stored position wherein said first end portion rests upon said slide surface means at a forward location of the latter and said central panel portion extends generally parallel to said slide surface means; stop surface means being fixed to said panel support structure at a location, in the path of rearward movement of said first end portion of said panel cover along said slide surface means from said stored position, spaced a distance rearwardly from said forward location of said slide surface means at least as great as that between said forward location and the rear end of said slide surface means; said first end portion and said stop means being configured so as to cooperate to establish a horizontal pivot axis when the cover is in an intermediate position wherein said first end portion is in bearing engagement with said stop means, said cover being pivotable about said axis to an operative position wherein said central planar portion thereof extends rearwardly of and in covering relationship to said instrument panel; and releasable lock means for selectively releasably securing said panel cover to said support structure when the cover is in said operative position.

B 355,510

AIR CUSHION VEHICLE CELL HAVING RIGID BASE

Wilfred James Eggington, Claremont, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Apr. 30, 1973, Ser. No. 355,510

Int. Cl. B60v *1/04*

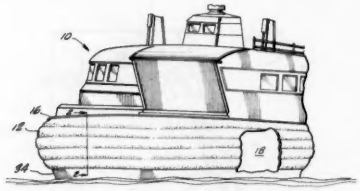
U.S. Cl. 180—121 **5 Claims**

Group Art Unit 316

References Cited

UNITED STATES PATENTS

3,267,882	8/1966	Rapson et al.	180/124 X
3,272,272	9/1966	Hall et al.	180/122 X
3,363,718	1/1968	Hammett	180/128
3,473,503	10/1969	Gunther	180/126 X
3,504,755	4/1970	Bliss et al.	180/121 X
3,631,938	1/1972	Eggington	180/124
3,700,065	10/1972	Eggington	180/121 X
3,752,253	8/1973	Hopkins et al.	180/127



1. An air cushion vessel having a periphery about a hull and supported upon a large central air cushion during transport, comprising:

a. at least one air cushion cell disposed depending from at least a bow section of said periphery forming a bow seal for said larger, central air cushion;

b. each said cell including a flexible wall and capable of vertical compression, and fixed at its upper end to said periphery of said vessel, said cell being pneumatically connected to a source of air pressure;

c. each said cell further including a rigid base oriented at a planing angle relative to the desired direction of movement of the vehicle, said rigid base having an orifice therein for allowing air to escape to below said base; and

d. at least a portion of said rigid base disposed in substantial contact with a surface over which said vessel transports.

B 342,763

METHOD AND APPARATUS FOR VACUUM EVACUATION AND PRESSURE FILLING OF SEALED PIN JOINTS

Harold L. Reinsma, Dunlap, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 19, 1973, Ser. No. 342,763

Int. Cl. F01m *11/04*

U.S. Cl. 184—1 R **9 Claims**

Group Art Unit 342

References Cited

UNITED STATES PATENTS

2,750,581	6/1956	Darian	340/242
2,767,392	10/1956	Szwargulski	340/242
2,791,244	5/1957	Schlichten et al.	141/7
3,216,527	11/1965	Lewis	184/1.5

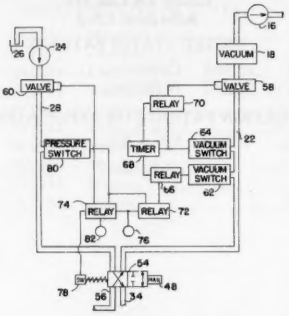
1. An apparatus for vacuum evacuating and pressure filling a lubricant reservoir comprising:

a gun adapted for sealing engagement with an opening of the lubricant reservoir,

a source of vacuum,

a source of lubricant,

sequence timing and shutoff means for first intercommunicating said vacuum source with said lubricant reservoir by way of said gun to evacuate said lubricant reservoir and then intercommunicating said lubricant source with said evacuated lubricant reservoir to substantially completely



fill the entire volume of said evacuated lubricant reservoir with lubricant,

said sequence timing and shutoff means including a first indicator means for indicating when evacuation of the lubricant reservoir has reached a first level,

and a second, separate indicator means for indicating when filling of the lubricant reservoir is completed,

and further including means for checking for air leaks and preventing intercommunicating with the lubricant source if a leak is present.

B 358,939

VEHICLE BRAKING DEVICES

Pierre Etienne Bessiere, Golf St.-Nom-La-Breteche, France, assignor to Labavia-S.G.E., Paris, France

Filed May 10, 1973, Ser. No. 358,939

Claims priority, application France, May 26, 1972, 72.19058

Int. Cl. F16d *57/02*

U.S. Cl. 188—296 **11 Claims**

Group Art Unit 315

References Cited

UNITED STATES PATENTS

2,363,821	11/1944	Webster	188/290
2,750,009	6/1956	Polil	188/296
2,786,552	3/1957	De La Mater et al.	188/296
3,024,876	3/1962	Montgomery	188/296
3,512,616	5/1970	Bessiere	188/296
3,650,358	3/1972	Bessiere	188/296

FOREIGN PATENTS OR APPLICATIONS

220,497	8/1957	Australia	188/296
537,867	10/1931	Germany	188/296

1. Hydraulic vehicle braking apparatus, comprising

a housing;

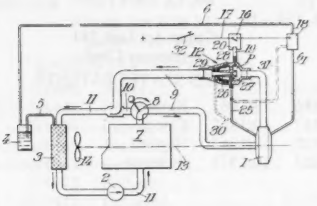
a closed fluid system for supplying fluid to, and emptying fluid from said housing, said system including an expansion vessel (3);

a first purging pipe (6) connecting the center portion of said brake housing with the top of said expansion vessel, whereby the inner gaseous volume at the center of said brake means is conducted to the top of the vessel;

valve means (18) connected in said purging pipe, said valve means being operable between open and closed conditions to afford and to interrupt communication, respec-

tively, between said housing and said expansion vessel; and

means responsive to the pressure of the fluid emptying from said housing in said system for controlling the operation of said valve means to cause said valve means to be in the open



condition for a given time delay period (t_A) during the initial filling of the housing and to be in the closed condition during the remainder of the filling period, said control means being operable to cause said valve means to be in the open condition during the entire period of emptying of fluid (t'_x) from said housing.

B 340,767
VOLTAGE RAIL

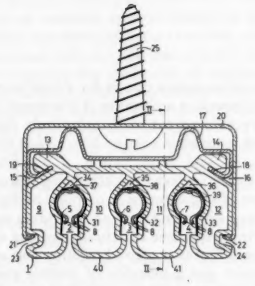
Johannes Kurt Bertrams, deceased, late of Hugo de Grootplein 35, Hilden, Germany (by Casper Antonius Henricus Mulkens, administrator)

Filed Mar. 13, 1973, Ser. No. 340,767
Claims priority, application Netherlands, Mar. 18, 1972, 7203660
Int. Cl. H01r *9/00*
U.S. Cl. 191—29 **4 Claims**
Group Art Unit 312

References Cited

UNITED STATES PATENTS

3,345,471	10/1967	Kilburg	191/23 R
3,382,328	5/1968	Gerard	191/23 R
3,489,981	1/1970	Corl et al.	191/23 R



1. A voltage rail comprising an elongated support of insulating synthetic material, at least two accessible slots recessed in said support, a current conductor carried in each of said slots for cooperating with contact members of a current consumer when inserted in said slots, said slots defined by thin walled sections of said support material therebetween, and at least one cavity formed between said thin walled sections.

B 382,290
FLUID ACTUATED CLUTCH

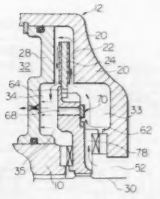
Takashi Ookubo, No. 61, Nakazato-cho, Minami-ku, Yokohama City, and Hideo Hamada, No. 2-13-5-204, Tsurugaoka, Yokosuka City, both of Japan

Filed July 25, 1973, Ser. No. 382,290
Claims priority, application Japan, July 26, 1972, 47-74781
Int. Cl. F16d *25/63*
U.S. Cl. 192—86 **6 Claims**
Group Art Unit 345

References Cited

UNITED STATES PATENTS

2,178,017	10/1939	Fedden et al.	192/86
3,213,988	10/1965	Maurice et al.	192/113 B X
3,437,183	4/1969	Maurice	192/113 B X



1. A clutch assembly comprising:

a rotatable clutch drum;

a fluid pressure responsive pressure plate defining with said clutch drum first and second chambers which are adapted to receive fluid under pressure selectively;

a drive friction disc fixed to said clutch drum and exposed to said second chamber;

a clutch hub rotatable within said second chamber;

a driven friction disc splined to said clutch hub, said driven friction disc being movable toward said drive friction disc to engage with said drive friction disc in response to pressure in said first chamber, and away from said drive friction disc to disengage from said drive friction disc in response to pressure in said second chamber, said clutch hub and said driven friction disc dividing said second chamber into a first sub-chamber adjacent to said drive friction disc and a second sub-chamber adjacent to said pressure plate, said first and second sub-chambers being on axially opposite sides of the hub and disc assembly;

said pressure plate having formed therethrough at least one passageway for permitting fluid communication between said first chamber and said second subchamber;

said clutch hub having formed therethrough at least one hole for permitting fluid communication between said first and second sub-chambers;

a valve for permitting fluid to flow from said second to said first sub-chamber through said at least one hole, but preventing fluid from flowing from said first to said second sub-chamber through said at least one hole.

B 405,938
GEAR SHIFT WITH POSITIVE LOCK MEANS

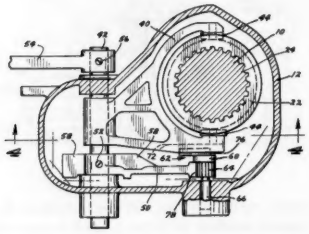
David F. Thomas, West St. Paul, and William L. Kafka, Roseville, both of Minn., assignors to Waterous Company, St. Paul, Minn.

Filed Oct. 12, 1973, Ser. No. 405,938
Int. Cl. F16d 13/60
U.S. Cl. 192—114 6 Claims
Group Art Unit 345

References Cited

UNITED STATES PATENTS

2,110,964	3/1938	Ridgeway	192/114 X
2,760,385	8/1956	Fuchs	74/625
2,785,783	3/1957	Homrig et al.	192/114
2,988,189	6/1961	Thomas et al.	192/89 R X
3,189,149	6/1965	Thomas et al.	192/82 R
3,603,175	9/1971	Horton	74/625
3,800,617	4/1974	Dornan	74/475



1. In a power transmission train including a gear case, a drive gear rotatably mounted in said gear case, at least one driven gear rotatably mounted in concentric, end-to-end relation to a first end of the drive gear, a shift collar splined to the drive gear to be rotatable with it, the shift collar being slidable longitudinally of the drive gear to driveably encompass a portion of the driven gear, said shift collar being provided with an outer race, a shift fork, means on said shift fork to ride in said shift collar race, a shift shaft mounted in said gear case in spaced relation to the axis of said drive gear and said driven gear and having an axis perpendicular to a plane including the axis of said drive gear, said shift fork being pivotally supported on said shift shaft to move said shift collar between a position where it is in engagement with said driven gear and a position where it is out of engagement therewith, the improvement including:

A. a sector gear pivotally mounted on said shift shaft and having a rack-like section of gear teeth extending in direction outwardly from said shift shaft;

B. a crank arm assembly including a pinion gear pivotally mounted on said gear case in position to be in meshing relation to said sector gear teeth, and an oppositely extending stud, having an axis parallel to and offset from the axis of said pinion gear;

C. said shift fork being provided with an elongated channel lying in direction substantially transverse to that of the axis of said drive gear and said driven gear, said channel being of size to receive said crank arm stud, the stud being free to slide with respect to said channel; and

D. means for rotating said sector gear about the axis of said shift shaft alternatively in direction to rotate the pinion gear to cause the crank arm stud to move the shift fork in direction to move the shift collar into and out of engagement with the driven gear.

B 334,251
VENDING MACHINE ELECTRICAL OPERATING CIRCUIT

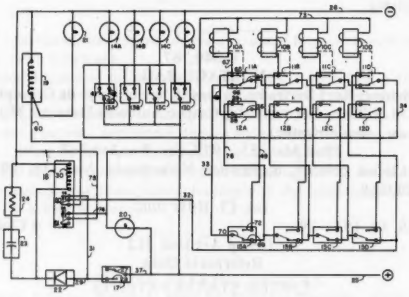
Raymond D. Bowman, Ringgold, Ga., assignor to Cavalier Corporation, Chattanooga, Tenn.

Filed Feb. 21, 1973, Ser. No. 334,251
Int. Cl. G07f 11/00
U.S. Cl. 194—10 24 Claims
Group Art Unit 311

References Cited

UNITED STATES PATENTS

3,334,786	8/1967	Newberry	221/125 X
3,349,881	10/1967	Camp	194/10
3,357,532	12/1967	Howard	221/129 X
3,613,854	10/1971	Bowman	194/10



1. An electrical control circuit for a coin operated vending machine incorporating a plurality of dispensing columns each adapted to receive artices to be selectively dispensed, comprising: a coin responsive vend switch; a vend relay responsive to actuation of said vend switch; a plurality of selector switches, each said selector switch being associated with an individual one of said columns; a plurality of dispensing actuators each being associated with an individual one of said columns and being responsive to actuation of one of said selector switches from a first to a second position and energization of said vend relay; and a plurality of control switching means each being associated with an individual one of said columns and being responsive to an individual one of said dispensing actuators, said switching means having a first position for mutually exclusively completing a first enabling circuit including each said selector switches for maintaining said vend relay energized when selector switches are all maintained in their first position and a second position for completing an energizing circuit to each one of said plurality of dispensing actuators for selectively dispensing a single article upon actuation of a selector switch to its second position.

B 307,677
BELT PRINTER

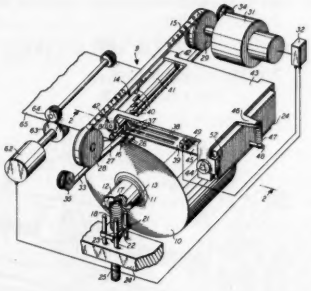
Jack L. Metz, Des Plaines, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Nov. 17, 1972, Ser. No. 307,677
Int. Cl. B41j 3/44
U.S. Cl. 197—1 R 12 Claims
Group Art Unit 337

References Cited

UNITED STATES PATENTS

765,532	7/1904	White	101/93 C X
1,191,697	7/1916	Himmer	101/228
2,152,031	3/1939	Currier	225/85
2,918,865	12/1959	Wooding	101/93 C
3,113,509	12/1963	Simpson	101/111
3,651,915	3/1972	Folkens	197/53
3,698,529	10/1972	Cattaned	101/93 C X



1. In an apparatus for recording characters selectively and sequentially across an outer coil of material as the material is uncoiled from a web of the material;

an impact mechanism for striking character dies against the material;

means for continuously urging the web and the impact mechanism relatively toward each other to permit the uncoiled portion of the web to serve as a backing for the outer coil of material against which the character dies strike when the characters are recorded; and

means positioned between the web and the impact mechanism for engaging the outer coil of material of the web and for holding successive sections of the outer coil in a printing location relative to the impact mechanism and against the web as the web uncoils.

11. In an impact printer wherein an impactor means comprises a plurality of equally spaced apart and outwardly projecting impacting elements disposed in a single turn helix on the surface of a cylinder rockably mounted for impacting selected ones of a linear array of characters for printing, the improvement comprising:

a carrier for the characters mounted for transverse movement relative to and along a line on a web on which printing is to be effected;

a plurality of resilient tines having an individual pallet attached to each tine, whereas the pallets are located between the carrier and the cylinder, so that each pallet corresponds to a printing space in a line of print across the web and is sequentially aligned with successive impacting elements as the cylinder rotates for printingly impacting the characters; and

magnetic means for rocking the cylinder into element impacting engagement with successive pallets for printing.

B 405,248
CHANGEABLE TYPE HEAD

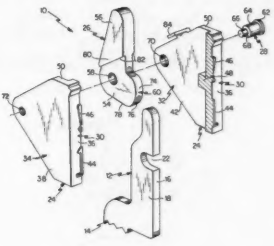
Donald G. Bastian, Homer, N.Y., assignor to SCM Corporation

Filed Oct. 10, 1973, Ser. No. 405,248
Int. Cl. B41j 1/04
U.S. Cl. 197—36 8 Claims
Group Art Unit 337

References Cited

UNITED STATES PATENTS

265,747	10/1882	Briggs	403/374
1,206,972	12/1916	Anderson	197/36
2,171,470	8/1939	Munoz	197/36
2,862,592	12/1958	Redmond	197/36
3,263,792	8/1966	Snyder	197/36
3,308,916	3/1967	Canny et al.	197/36



1. In a changeable type head of the type having rear and side walls for enveloping rear and side surfaces, respectively, of a typebar; at least one type character on an exterior surface of the rear wall of the changeable type head; and means for blocking longitudinal movement of the changeable type head on the typebar; the improvement comprising, in combination:

a. a pivot spanning the side walls of the changeable type head, substantially perpendicular to the side walls, and in front of the typebar;

b. a lever on the pivot;

c. a lock surface on the lever, the lock surface farther than a mating front surface of the typebar from the pivot when the typebar is against the rear wall of the changeable type head;

d. a release surface on the lever, the release surface closer than the mating front surface of the typebar to the pivot when the typebar is against the rear wall of the changeable type head; and

e. a handle on an opposite end of the lever from the lock surface for pivoting the lever so that the lock surface faces the typebar to lock the changeable type head on the typebar in cooperation with the blocking means and for pivoting the lever so that the release surface faces the typebar to release the changeable type head from the typebar.

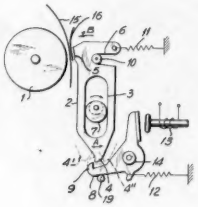
B 287,373
PRINTING MECHANISM

Tadayoshi Shimodaira, 1192-2 Yoshikawamurai-machi, Matsumoto, Japan

Filed Sept. 8, 1972, Ser. No. 287,373
Claims priority, application Japan, Sept. 10, 1971, 46-70112
Int. Cl. B41j 9/28
U.S. Cl. 197—49 1 Claim
Group Art Unit 337

References Cited
UNITED STATES PATENTS

2,771,025	11/1956	Kistner et al.	101/93 C
2,792,779	5/1957	Toeppen et al.	101/93 C
2,813,481	11/1957	Hansen	101/93 R
2,833,387	5/1958	Lake et al.	101/93 C
2,910,935	11/1959	Cignetti	101/93 C
3,128,694	4/1964	Kittler	101/93 C
3,139,820	7/1964	Kittler	101/93 C
3,188,946	6/1965	Schacht	101/93 C
3,255,693	6/1966	Eissfeldt et al.	101/93 C
3,292,531	12/1966	Mutz	101/93 C
3,673,956	7/1972	Huber et al.	101/93 C



1. A printer comprising a rotatable print drum having an array of print characters on the peripheral surface thereof, oscillatable striking means for selectively striking said print drum for carrying a printable material interposed therebetween into printing contact with said peripheral surface of said print drum, said striking means comprising a reciprocable print hammer having a print face arranged opposite a predetermined portion of said print drum and within striking distance thereof, a stopper guide groove substantially opposite said print hammer face and extending substantially laterally a predetermined distance toward said print face, an interior cam slot substantially perpendicular to said print face and stopper guide groove, and a tooth remote from said print hammer depending downwardly from said striking means; a stopper engageable in said stopper guide groove for limiting a reciprocal return stroke of said print hammer after an imprint is effected, said stopper being fixed relative to the reciprocable movement of said print hammer; means for normally biasing said print hammer against said stopper; a rotatable eccentric cam mounted in said interior cam slot, said cam being unidirectionally rotatable counter to the print stroke direction of said reciprocable print hammer, said cam being arranged to oscillate said striking means about said stopper in a nonprint position of said printer; an impulse responsive trigger lever engageable with said tooth of said striking means for driving said print hammer of said striking means into printing contact with said print drum; biasing means for normally biasing said trigger lever out of engagement with said tooth of said striking means; and means for generating an impulse to which said trigger lever is responsive for driving said trigger lever oppositely of said normal bias thereon for driving said print hammer; said striking means being oscillatable about a point of contact between said trigger lever and said tooth of said striking means in a print position of said printer and said print hammer thereof being simultaneously reciprocable between said print drum and said stopper.

B 284,297
DRUM PRINTER

Raymond Ralph Bowdle, Morgan Hill, and Robert Junior Laybourn, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

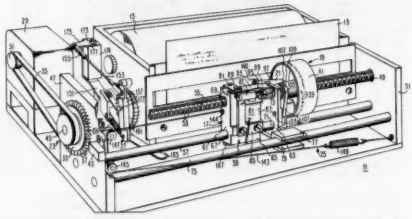
Filed Aug. 28, 1972, Ser. No. 284,297
Int. Cl. B41j 1/34
U.S. Cl. 197—54 5 Claims
Group Art Unit 337

References Cited
UNITED STATES PATENTS

2,843,243	7/1958	Masterson	197/19
2,958,568	11/1960	Hagelbarger	197/1 R
3,295,652	1/1967	Sasaki	197/53
3,326,346	6/1967	Sasaki	101/111 X
3,378,127	4/1968	Clary et al.	197/53
3,384,216	5/1968	Thayer	197/53
3,408,930	11/1968	Chamness et al.	101/93
3,415,184	12/1968	Perucca	101/93 C
3,589,494	6/1971	Gloess	197/18
3,651,914	3/1972	Locke	197/49
3,651,916	3/1972	Becchi	101/93 C
3,717,234	2/1973	Koller	197/53

FOREIGN PATENTS OR APPLICATIONS

1,239,360	7/1971	Great Britain



1. A high speed printer for recording characters on a medium comprising:

a rotatable drum having a cylindrical wall of resilient material,

a series of type formations disposed in a helical path on the periphery of said cylindrical wall,

means for feeding the medium past the periphery of said cylindrical wall,

driving means for rotating said drum about the axis of said helical path and at the same time translating said drum longitudinally along said axis so that each type formation will pass in substantially continuous succession past each of a plurality of spaced printing positions on the medium,

a striking member located at least partially inside of said drum and movable by said driving means together with said drum in a longitudinal direction when said drum is translating longitudinally along said axis, and

means for selectively actuating said striking member against the inside surface of said cylindrical wall behind a selected type formation whenever a selected type formation passes one of said printing positions, thereby causing resilient flection of said drum wall to selectively imprint characters on said medium;

said driving means comprising:

a motor,

an elongated drive shaft rotatably driven by said motor,

said shaft having a series of threads formed on its periphery and a longitudinal slot formed on the periphery of said shaft in parallel relationship with the axis of rotation of said shaft,

a slidable carriage having at least one bore formed therein for receiving said drive shaft,

a pivoted and threaded element supported by said carriage and selectively cooperable with the threads on the periphery of the drive shaft for translating said carriage along the longitudinal axis of the drive shaft when said shaft is rotatably driven by said motor and the pivoted element is in threaded engagement with said drive shaft,

said drum including in addition to its cylindrical wall a hub, and

said hub having a key formed thereon for cooperation with the longitudinal slot of said shaft, so that the drum is rotatably driven by the shaft upon rotation thereof by the motor.

B 350,523

TYPEHEAD SUPPORT FOR A SINGLE ELEMENT PRINTER

Herbert Decker, Lauf, Germany, assignor to Triumph Werke Nurnberg, A.G., Nurnberg, Germany

Filed Apr. 12, 1973, Ser. No. 350,523

Claims priority, application Germany, Apr. 15, 1972, 2218310

Int. Cl. B41j *7/08*

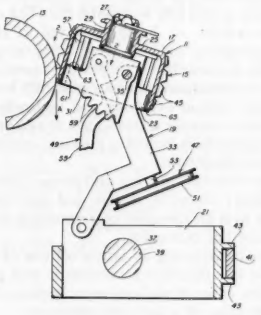
U.S. Cl. 197—55 **4 Claims**

Group Art Unit 337

References Cited

UNITED STATES PATENTS

2,926,768	3/1960	Becker et al.	197/55 X
3,247,941	4/1966	Beattie et al.	197/55
3,286,806	11/1966	Schoenfelder	197/16
3,406,807	10/1968	Sasaki et al.	197/55
3,618,735	11/1971	Bleau	197/55 X



1. In a single element printer comprising

a hollow inverted cup shaped typehead having type characters on its outer periphery located in rows and columns, a platen,

a support member axially supporting said typehead for rotational movement to position a selected column of type characters opposite said platen,

support means pivotally supporting said support member for tilting movement to position a selected row of type characters opposite said platen,

said support means being movable from a rest position to a printing position to impact a selected type character against said platen,

said typehead on impact experiencing deformation with the lower portion tending to move tangentially relative to said platen and support member,

said lower portion of said typehead having edge defining means located in a radial plane,

and said support member having a radially extending abutment located opposite said platen and located closely beneath said edge defining means for arresting tangential movement of said typehead relative to said platen and said support member on impact of a selected type character against said platen.

B 329,115

CARTRIDGE WITH RESILIENT CONNECTING MEANS

Joseph L. Morelli, Hartford, Conn., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Feb. 2, 1973, Ser. No. 329,115

Int. Cl. B41j *33/14*

U.S. Cl. 197—151 **1 Claim**

Group Art Unit 337

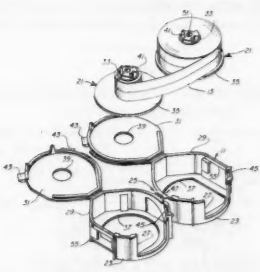
References Cited

UNITED STATES PATENTS

2,825,450	3/1958	Lambert	197/151 X
3,094,204	6/1963	Landgraf	197/151
3,151,724	10/1964	Ross et al.	197/151
3,195,708	7/1965	Biedinger	197/175
3,195,828	7/1965	Kuckhoff et al.	197/175 UX
3,425,532	2/1969	Dannatt	197/151
3,581,864	6/1971	Landgraf	197/175

FOREIGN PATENTS OR APPLICATIONS

494,600	3/1930	Germany	197/151



1. In a ribbon cartridge, the combination comprising:

a pair of spool holders for rotatably supporting a pair of spool means having a ribbon secured therebetween and wound upon at least one of said pair of spool means,

said pair of spool holders each comprising an upwardly open container having a peripheral wall with at least a partial arcuate configuration and a ribbon opening formed therein for enabling the ribbon extending between said spool means to pass through the peripheral walls of said containers, a cover hingedly connected to a portion of each of said peripheral walls opposite said ribbon openings, and tab and slot means on said covers and walls for closing said containers,

said covers having a central opening defining an axis for rotation of each of the pair of spool means,

a plurality of resilient connectors extending in a horizontal plane between and joining in close proximity the arcuate portions of the peripheral walls of said pair of spool holders with the ribbon openings spaced circumferentially from said plurality of connectors and spaced apart from each other a distance substantially greater than the distance where the peripheral walls are connected by said plurality of connectors to form a gap to be spanned by the ribbon for enabling the ribbon to be drawn substantially tangential between said pair of spool holders with the axis of rotation of the pair of spool means being in a common plane,

said plurality of connectors, said span of ribbon and said arcuate peripheral walls of said spool holders defining the boundaries of an area to allow access to a ribbon vibrator through which the span of ribbon is to be threaded,

each of said plurality of connectors having an intermediate portion of reduced cross-section capable of flexure for enabling said pair of spool holders to be manipulatively pivoted and twisted relative to each other with the axis for rotation of the pair of spool means being moved from the common plane to facilitate threading of the ribbon in a ribbon vibrator,

said plurality of connectors being rupturable at the intermediate portions of reduced cross-section after threading by moving said pair of spool holders from each other.

B 442,859

CONTAINER STABILIZING APPARATUS

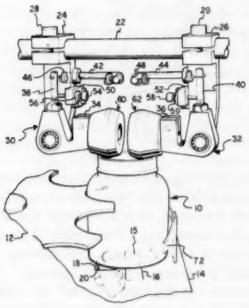
James A. Dunham, Boyd St., 62035, Godfrey; August J. Federle, 2100 W. Dell Drive, 62002, Alton, both of Ill., and Thomas B. Sorbie, 3802 Woodmont Road, Toledo, Ohio 43613

Filed Feb. 15, 1974, Ser. No. 442,859
Int. Cl. B65g *47/24*
U.S. Cl. 198—19 **11 Claims**
Group Art Unit 311

References Cited

UNITED STATES PATENTS

3,327,849	6/1967	Sorbie	209/111.7 X
3,557,950	1/1971	Powers	209/111.7
3,587,815	6/1971	Sorbie	198/22



6. Apparatus for controlling the rotation about its vertical axis of a glass container, having an open mouth defining a rim, at an inspection station by engagement of the heel portion of the container with a rotating drive wheel, comprising, in combination:

a first tapered roller positioned in contact with the inner edge of said rim vertically adjacent the location of said drive wheel;

a second tapered roller positioned in contact with the inner edge of said rim at a location substantially diametrically opposed to that of said first tapered roller; and

means for rotatably supporting said first and second tapered rollers.

B 440,898

METHOD AND APPARATUS FOR TRANSFERRING ARTICLES FROM A CONVEYOR

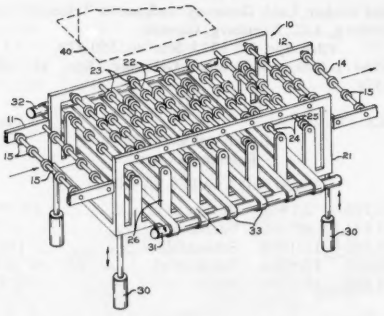
John A. Goldinger, Boiling Springs, Pa., and Dwight R. Peterson, Burkburnett, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 8, 1974, Ser. No. 440,898
Int. Cl. B65g *47/26*
U.S. Cl. 198—31 AB **27 Claims**
Group Art Unit 313

References Cited

UNITED STATES PATENTS

1,776,201	9/1930	Clair et al.	198/20 T
2,536,756	1/1951	Lopez	198/20 T
3,680,677	8/1972	Branch et al.	198/20 R



1. An apparatus for transferring articles in a transverse direction from a generally horizontal main line conveyor upon which said articles are being conveyed at close intervals, without interrupting said conveying, comprising:

a vertically movable frame supporting a generally horizontal lower conveyor section and a generally horizontal upper conveyor section overlying and vertically spaced from said lower conveyor section; each of said upper and lower conveyor sections including means to convey an article in one given direction;

means for vertically moving said frame to selectively align said upper conveyor section and said lower conveyor section with an elevation corresponding to the elevation of a main line conveyor;

means for transporting an article off one of said conveyor sections in a direction transverse to said given direction when the other of said conveyor sections is aligned with said elevation of a main line conveyor.

6. A conveyor system comprising:

a generally horizontal main line conveyor having means for conveying articles in a given direction;

at least one work station laterally displaced from said main line conveyor;

a vertically movable frame interposed between upstream and downstream main line conveyor sections adjacent to said work station, said frame supporting a generally horizontal lower conveyor section and a generally horizontal upper conveyor section overlying and vertically spaced from said lower conveyor section; each of said upper and lower conveyor sections having means to convey an article in the same given direction as said main line conveyor; and

means for vertically moving said frame to selectively align said upper conveyor section and said lower conveyor section with the elevation of said main line conveyor; and means for transporting an article off one of said conveyor sections and toward said work station when the other of

said conveyor sections is aligned with said elevation of said main line conveyor.

13. A method of transferring articles toward a transversely displaced work station from a main line conveyor upon which said articles are being horizontally conveyed at close intervals comprising the steps of:

a. aligning a first conveyor section between upstream and downstream portions of the main line conveyor so as to provide a continuous path for conveyance of articles therebetween;

b. stopping a selected article on said first conveyor section;

c. vertically translating said first conveyor section out of alignment with said main line conveyor portions. and aligning a second conveyor section with said main line conveyor portions in place of said first conveyor section so as to restore the continuous path for conveyance of articles therebetween;

d. transferring said selected article from said frist conveyor section in a direction transverse to said main line conveyor, and at the same time conveying a subsequent article from said upstream portion to said downstream portion of the main line conveyor by way of said second conveyor section;

e. vertically translating said first and said second conveyor sections so as to return said first section into alignment with said main line portions and to remove said second section from alignment with said main line portions; and

f. repeating the sequence of steps (a) through (e) for each article to be transferred, whereby transfers from the main line are accomplished without affecting the continuous conveying of articles along the main line conveyor.

B 357,057

MULTI CONTAINER PACKAGE AND CARRIER

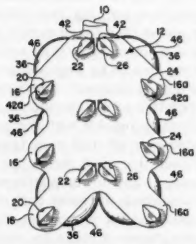
Robert C. Olsen, Wheeling, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed May 3, 1973, Ser. No. 357,057
Int. Cl. B65d *25/22, 85/62*
U.S. Cl. 206—427 **11 Claims**
Group Art Unit 241

References Cited

UNITED STATES PATENTS

2,030,996	2/1936	Lustig	206/466
2,070,414	2/1937	Snell	229/52 A
2,514,858	7/1950	Gray	294/87.2
2,669,351	2/1954	Carson et al.	206/526
2,745,545	5/1956	Dunning	206/466
3,116,947	1/1964	Brownrigg	224/45 P
3,297,220	1/1967	Leeberg	224/45
3,331,501	7/1967	Stewart, Jr.	229/55
3,195,298	7/1965	First	209/90 X
3,207,307	9/1965	Means	209/74 R
3,387,703	6/1968	Foster	209/73
3,563,376	2/1971	Zegna	209/73
3,606,012	9/1971	Brouwer	209/8 L X



1. A package of filled and sealed pouch-like containers each with closed ends presenting corner portions of maintained integrity and relative stiffness, and carrier means including a pair of end support members connected by a strap portion, and each end member having groups of recess means with the recess means of each group oriented in accordance with the spacing arrangement of the corner portions of an adjacent container in the package and wedgingly receiving and interlocking with adjacent corner portions trapping the containers in the package for handling and transport.

6. A carrier blank for supporting in package form a plurality of filled pouch-like containers each with closed ends having spaced projecting corner portions, and comprising a pair of end support portions connected by a strap portion of a length permitting the end portions to be angled relative thereto for disposition across the ends of containers in package form, and each end portion having groups of recess means with the recess means of each group oriented in accordance with the spacing of the corner portions of an adjacent container in package form for wedgingly receiving the adjacent corner portions for support of containers in packaged assembly.

11. A package of plurality of filled and sealed pouch-like containers, each of said containers having a generally cylindrically body portion and closed ends each of which presents a pair of opposed corners projecting radially outwardly of the body portion, said body portion and closed ends of said containers being of substantially maintained integrity and relative stiffness, and a carrier formed from a sheet of unsupported resilient plastic material, said carrier comprising a central strap portion and end sections, each of said end sections having a plurality of spaced apart apertures, said containers being arranged in a longitudinal contiguous relationship of two vertical contiguous rows, and said end sections mounted over the closed ends of said containers with said spaced apart apertures engaging the opposed corners of said closed ends to urge said body portions of adjacent containers together along lines circumferentially displaced from lines drawn longitudinally of said containers through said opposed corners.

B 398,597

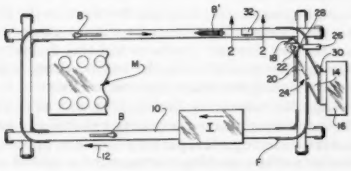
SINGLE CONVEYOR SYSTEM FOR BOBBINS ABOUT A TEXTILE APPARATUS

John Nelson, North Kingstown, R.I., assignor to Leesona Corporation, Warwick, R.I.

Filed Sept. 19, 1973, Ser. No. 398,597
Int. Cl. B07c
U.S. Cl. 209—73 **11 Claims**
Group Art Unit 311

References Cited

UNITED STATES PATENTS



7. A method of conveying wound and empty bobbins on conveying means defining a common path around a plurality of stationary strand processing stations on a textile machine where said wound and empty bobbins have butt and apical ends comprising, sequentially sensing the condition of bobbins being wound at said stations, placing bobbins having a predetermined amount of yarn wound thereon on said conveying means, concurrently conveying said empty bobbins to said stations and said wound bobbins away from said stations on

said conveying means, detecting a wound bobbin on said conveying means, producing a signal in response to detection of said wound bobbin, and removing said wound bobbin from said conveying means in response to said signal.

B 363,962

TRAY STACKING SYSTEM

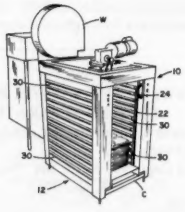
Howard Gene Rice, 1109 Hadrian Ct., Irving, Tex. 75060, and Lawrence Peter Kitterman, 11426 Willow Ln., Cypress, Tex. 77429

Filed May 25, 1973, Ser. No. 363,962
Int. Cl. B65g *57/14*
U.S. Cl. 214—6 FA **10 Claims**
Group Art Unit 314

References Cited

UNITED STATES PATENTS

835,312	11/1906	McNabb	214/6 FA X
1,342,463	6/1920	Sanwo	214/6 FA X
2,854,152	9/1958	Miller	214/6 FA
3,486,939	12/1969	Pinckard	134/63 X
3,533,517	10/1970	Heide	198/163 X
3,591,018	7/1971	Nalbach	198/163 X
3,718,267	2/1973	Hiebert et al	214/6 FA



1. A tray stacking system comprising:

a plurality of tray stacking members each comprising an elongate tray receiving ledge adapted to receive one edge of a tray;

endless conveyor means defining a tray stacking course extending downwardly from a tray receiving zone to a tray stacking zone;

means supporting the tray stacking members on the endless conveyor means in opposed pairs and for pivotal movement between dormant positions and tray receiving and supporting positions wherein the tray receiving ledges of the tray stacking members face one another;

said means for supporting the stacking members on the endless conveyor means comprising a plurality of pairs of pins each including a first pin for pivotally supporting one end of one of the stacking members and a second pin for controlling the pivotal positioning of the tray stacking member when the tray stacking member is in the tray receiving and supporting position;

means for pivoting each tray stacking member to the tray receiving and supporting position prior to the movement of the tray stacking member into the tray receiving zone under the action of the endless conveyor means; and

means responsive to engagement of each tray stacking member with a tray in the tray stacking zone for pivoting the stacking member to the dormant position.

B 448,571

CAR GARAGE

Ulrich Lendi, Chapfwiesenstrasse 6, 8712 Stafa/Schweiz, Switzerland

Filed Mar. 6, 1974, Ser. No. 448,571
Claims priority, application Germany, Mar. 20, 1973, 2313695
Int. Cl. E04h *6/06*
U.S. Cl. 214—16.1 ED **6 Claims**
Group Art Unit 314

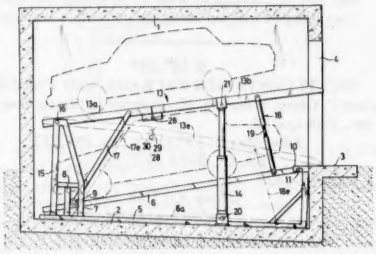
References Cited

UNITED STATES PATENTS

3,387,722	6/1968	Fisher, Sr. et al.	214/16.1 ED
3,493,129	2/1970	Wohr	214/16.1 ED
3,520,423	7/1970	Gerhardt	214/16.1 ED
3,712,485	1/1973	Klaus	214/16.1 ED

FOREIGN PATENTS OR APPLICATIONS

2,028,564	12/1971	Germany	214/16.1 ED
468,552	3/1969	Switzerland	214/16.1 ED



1. A garage for parking two vehicles one above the other comprising a garage box parking area having an entrance opening providing access thereto, an entrance floor, a garage box floor located at a lower level than said entrance floor, allowing said parking area to be disposed in a recessed position relative to the garage entrance; upper and lower parking platforms, each operative to accommodate a vehicle, whose outer ends are optionally joinable with the garage entrance; a longitudinally spaced pair of rigid rods laterally connecting said platforms, on each side, with their upper and lower ends articulated to the upper and lower platforms respectively; a stationary support on which the inner end of said upper platform is pivotally mounted for movement about a horizontal axis; and a vertically disposed guide for said lower platform rising from the garage floor; wherein said upper platform is composed of two hingedly connected sections, with the inner section being pivotally connected to said stationary support and the outer section being joinable with the garage entrance and said longitudinally spaced connecting rods are articulated at their upper ends to said upper platform's inner and outer sections respectively.

B 314,271

CLOSURE DEVICE OF PLASTIC FOR TUBES AND CONTAINERS

Herman J. Vogel, Jr., No. 2 Central Dr., Rt. 1, Parkersburg, W. Va. 26101

Filed Dec. 11, 1972, Ser. No. 314,271
Int. Cl. B65d *41/30, 41/22*
U.S. Cl. 215—320 **5 Claims**
Group Art Unit 241

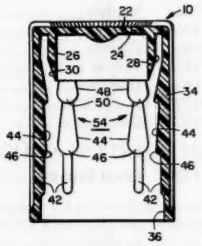
References Cited

UNITED STATES PATENTS

3,297,184	1/1967	Andelin	215/56 X
3,516,572	6/1970	Davis	215/41 X
3,672,528	6/1972	Faulstich	215/41 X
D185,724	7/1959	Terwilliger	215/41 X

FOREIGN PATENTS OR APPLICATIONS

174,450	2/1961	Sweden	215/41



4. A closure device of plastic for tubes, cans, bottles or other containers each having a smooth-walled inner and outer neck or mouth portion, generally cylindrical in shape, said device comprising a cap having:

a. a top wall;

b. an integral annular internal plug member depending from an inner face of said top wall, serving as means to close said container and of a size to make at least an annular line contact with said inner portion; and

c. an outer tubular skirt member concentric with said internal plug member having a slightly larger inner diameter than that of said outer portion and further having a plurality of circumferentially spaced-apart longitudinally extending continuous stepped abutments of varying heights on the inner surface of said skirt member to permit varying degrees of loose and interference fits between said skirt member and said outer portion as said cap is being applied to said outer portion to permit said cap to be used as a loose dust cover and breather cap, a fixed dust cover and breather cap, as well as a fixed dust cover and gas/liquid tight cap, with at least one step of said abutments including a tear-drop shaped area having apex means for deforming a contiguous area of said skirt member lying generally radially outwardly of said tear-drop shaped area.

B 299,267

WATCH-REPAIRING SET-UP

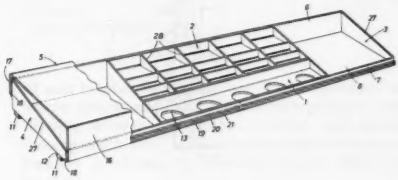
Rene Maurice Bargetzi, La Chaux-De-Fonds, Switzerland, assignor to Reno S. A., Canton of Neuchatel, Switzerland

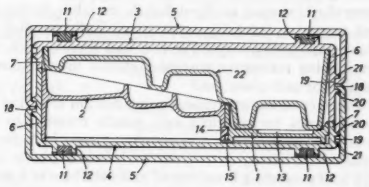
Filed Oct. 20, 1972, Ser. No. 299,267
Claims priority, application Switzerland, Oct. 20, 1971, 15280/71
Int. Cl. B65d *21/02*
U.S. Cl. 220—23.83 **7 Claims**
Group Art Unit 241

References Cited

UNITED STATES PATENTS

727,938	5/1903	Hall	206/1 R
1,654,225	12/1927	Tanner	220/4 E UX
3,350,810	11/1967	Warner et al.	206/16 R UX
3,647,105	3/1972	Keeslar	220/23.4





1. A watch repairing set-up comprising a movement-holder-strip, a repair materials box and two slide elements housing said strip and materials box, said strip, said box and said elements having the same length, said strip and said box being provided with longitudinal sides, at least one tenon projecting from one of said longitudinal sides and at least one corresponding recess in the other longitudinal side for receiving said tenon and for assembling said strip and said box side by side, each of said slide elements having two longitudinal walls spaced apart a distance equal to the width of the assembled strip and box, and said slide elements being provided with corresponding hook up means for removably assembling said elements end to end.

4. A watch repairing set-up comprising seven parts including a movement-holder strip, a repair materials box, two slide elements, two covers and a tool box, all of said parts having the same length, and each of them having two parallel longitudinal sides, said strip and said repair materials box being provided with assembling means for assembling the same side by side, said assembled repair materials box and strip being slidable in said slide elements, said assembled repair materials box and strip having a cross-section of trapezoidal shape and said tool box having a cross-section of trapezoidal shape complementary to the shape of the assembled repair materials box and strip, said tool box and said assembled materials box and strip occupying a space of rectangular cross-section when said tool box is piled on said assembled materials box and strip, said two covers covering, respectively, the top and bottom of the piled tool box and assembled materials box and strip.

B 367,040
POSITIVELY LOCKABLE ANGULARLY ADJUSTABLE HANDLE

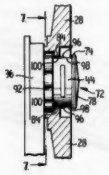
Joseph R. Andreaggi, Short Hills, and George Zenuch, Edison, both of N.J., assignors to Weston Instruments Inc., Newark, N.J.

Filed June 4, 1973, Ser. No. 367,040
Int. Cl. B65d *25/28*
U.S. Cl. 220—96 **10 Claims**
Group Art Unit 241

References Cited

UNITED STATES PATENTS

1,512,163	10/1924	Duckett	220/96
2,908,468	10/1959	Thomas	220/96
3,124,266	3/1964	Morgan	220/4 R
3,189,069	6/1965	Stowell	16/110 R



1. A portable instrument comprising:
a housing member;
a generally U-shaped resilient handle member having first and second coextensive arms substantially parallel to a plane and having respective first and second ends, said arms being resiliently movable relative to one another parallel to said plane; and
first and second means respectively adjacent said first and second ends for coupling said handle member to said housing member, each said coupling means including:
journal means having an axis and including a tubular resilient wall projecting from one of said members in a generally axial direction,
the other of said members having an internal wall centered on said axis and defining at least one aperture in which said tubular wall is received in a first axial position thereof for rotation about said axis,
inwardly yieldable stop means on the outer surface of said resilient tubular wall,
retainer means within said aperture for engaging said stop means to retain said resilient tubular wall against axial movement within said aperture in one direction between said first axial position and a second axial position thereof axially displaced with respect to said first position in said one direction when said tubular wall is subjected to an axial force smaller than a given value, and for inwardly camming said yieldable stop means resiliently into said resilient tubular wall upon axial displacement thereof within said aperture in said one direction toward said second axial position when said tubular wall is subjected to an axial force greater than said given value,
first interlocking means disposed upon said one member,
second interlocking means upon said other member for engaging said first interlocking means when said tubular wall is in its said second axial position to lock said handle member in a selected angular locking position with respect to said housing member,
said second interlocking means being disengaged from said first interlocking means when said tubular wall is in its said first axial position for permitting rotation of said handle member with respect to said housing member to select a desired angular locking position for said handle and housing members,
whereby said handle member can be locked in the selected angular position by moving said first and second resilient arms substantially parallel to said plane for causing said resilient tubular wall to shift from its said first to its said second axial position to lockingly engage said first and second interlocking means in the selected angular position.

B 304,687
REVERSIBLE HOPPER PARTITION FOR COMBINE DRILL

Frederick H. Ward, deceased, late of Coventry, England (by Dilys Annie Jane Ward, administratrix, Coventry, England), assignor to Massey-Ferguson-Perkins Limited, London, England

Filed Nov. 8, 1972, Ser. No. 304,687
Claims priority, application Great Britain, Nov. 18, 1971, 53712/71
Int. Cl. B67d *5/64*; **B65d** *1/24*
U.S. Cl. 222—134 **4 Claims**
Group Art Unit 241

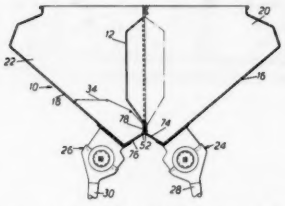
References Cited

UNITED STATES PATENTS

334,798	1/1886	Moran	68/143
1,880,461	10/1932	Moyes	220/22
2,279,426	4/1942	Walsh	220/22
2,737,315	3/1956	Rose	222/129
2,970,532	2/1961	Skelton	222/134
3,238,004	3/1966	Goebel	220/22
3,305,076	2/1967	Fleenor	220/22
3,432,064	3/1969	Tenpas et al.	220/22
3,584,135	6/1971	Dowtin	220/20
3,645,416	2/1972	Main, Jr.	220/22
3,738,129	6/1973	Biesinger et al.	68/145

FOREIGN PATENTS OR APPLICATIONS

163,544	5/1921	Great Britain	220/22.6



1. A combined seed and fertilizer drill hopper with at least one reversible partition wall for dividing the hopper into front and rear compartments characterized by the hopper including wall means forming an elongated trough, end walls and an open top, at least two rows of openings in the lower portion of said elongated trough, seed and fertilizer metering mechanisms each positioned to receive either seed or fertilizer from at least one of the openings in the lower portion of said elongated trough, a generally vertical elongated bottom flange attached to the wall means forming an elongated trough between rows of openings in the lower portion of said elongated trough, and at least two generally vertical end flanges extending inwardly from each end wall and lying substantially in a plane that is parallel to the long axis of the elongated trough and that contains the bottom flange; and the reversible partition wall for dividing the hopper into compartments including partition bottom flange means and two partition end flanges in substantially the same generally vertical plane parallel to the long axis of the reversible partition wall and a section of the partition wall between said flanges that is recessed to one side of the plane that is parallel to the long axis of the reversible partition wall and fastening means for holding the flanges on the reversible partition wall in engagement with the flanges

in the hopper with the recessed portion of the partition wall extending into either the front or the rear compartment.

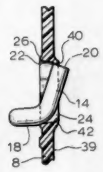
B 349,141
BAIL EARS FOR CONTAINERS

Henry E. Frankenberg, Hinsdale, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Apr. 9, 1973, Ser. No. 349,141
Int. Cl. B65d *25/32*
U.S. Cl. 224—45 C **10 Claims**
Group Art Unit 314

References Cited
UNITED STATES PATENTS

540,004	5/1895	Rudy	220/91
930,445	8/1909	Weaver	220/91
1,710,318	4/1929	Marter	220/95
2,106,175	1/1938	Hothersall	220/91
2,144,661	1/1939	Nelson	224/45 P
2,147,861	2/1939	Shopen	220/91
3,275,366	9/1966	Hidding	220/91
3,425,471	2/1969	Yates	220/91



1. Means for attaching a bail having a hook end and a pintle to a container having a side wall comprising a flexible plastic ear secured to said wall and having a web spaced outwardly of said wall, the web having inner and outer sides and an aperture for admitting the hook end therethrough and mounting said pintle therein, said aperture defined by an edge structure providing a combined guiding and bearing surface tapered inwardly from the outer surface to the inner surface and means to counter outward pull on the web by the bail comprising an apical fulcrum section at said inner surface and deflectible inwardly by the bail upon lifting of the container by the bail.

B 368,392
VACUUM GLASS STRIPPING

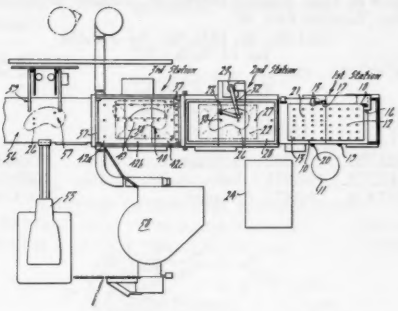
Eugene H. Augustin, Dearborn Heights; Roger E. Johnson, Westland, and Thomas L. Rakestraw, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed June 8, 1973, Ser. No. 368,392
Int. Cl. C03b *33/04*
U.S. Cl. 225—2 **7 Claims**
Group Art Unit 324

References Cited
UNITED STATES PATENTS

2,291,451	7/1942	Craig et al.	225/2
2,508,017	5/1950	Echter et al.	225/2
3,493,155	2/1970	Litant et al.	225/2
3,520,456	7/1970	Augustin et al.	225/2

1. A method of cutting a glass bracket, comprising:
a. firstly scoring one surface of said bracket at least at one location by the use of low pressure,
b. secondly scoring said one surface along another location utilizing high pressure, said high pressure scoring being carried out to pass inside of and transverse to the extent of said low pressure scoring, and
c. while supporting the unscored surface of said bracket on a porous member having stress risers arranged adjacent said scored locations, subjecting the entire scored surface



of said bracket to a membrane drawn uniformly downwardly against said bracket by vacuum pressure communicating through said porous member, said membrane causing said bracket to be severed at said secondly scored location in advance of severence at said firstly scored location.

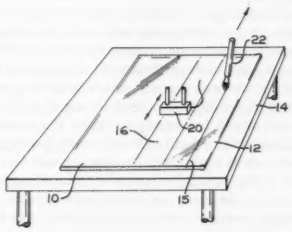
B 422,949
METHOD FOR TRIMMING GLASS

John R. Dahlberg, Jeannette, and Robert H. Grove, Sarvar, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 7, 1973, Ser. No. 422,949
Int. Cl. B26f *3/00*
U.S. Cl. 225—2 **13 Claims**
Group Art Unit 324

References Cited
UNITED STATES PATENTS

1,765,814	6/1930	Wright	225/93.5
2,310,469	2/1943	Snyder	225/93.5
3,344,968	10/1967	Kovacik	225/93.5 X
3,754,884	8/1973	McDavid et al.	225/96.5 X
3,800,991	4/1974	Grove et al.	225/96.5 X

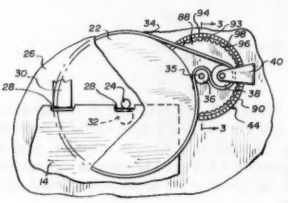


1. A method of cutting a piece of glass along an intended path of cut substantially parallel to an edge portion which exhibits preformed internal stresses which are compressive relative to the stresses in the main body of the piece comprising:
heating a band of the piece parallel to said edge portion and spaced from the intended path of cut in the direction away from said edge portion so as to effect a relaxation of the stresses in said edge portion; and

severing the piece along said intended path of cut before the heating effects dissipate from said band.

B 318,618
CARTRIDGE TAPE PLAYER DRIVE SYSTEM
Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Dec. 26, 1972, Ser. No. 318,618
Int. Cl. B65h *17/22*
U.S. Cl. 226—178 **24 Claims**
Group Art Unit 313
References Cited
UNITED STATES PATENTS

3,022,383	2/1962	Springer	310/83 X
3,612,375	10/1971	Baba	226/188
3,657,624	4/1972	Nagano	318/327 X



14. In a tape drive system for a cartridge tape player having a base, a capstan rotatably secured to the base, a motor secured to the base and having a rotor with a drive wheel and a stator with winding means, and means coupling the drive wheel to the capstan, the combination including,

speed sensing means coupled to the rotor and extending thereabout for producing an alternating current signal having a frequency varying with the speed of the motor, and

control means coupled between said speed sensing means and the winding means of the motor to control the speed thereof in response to the signal produced by said sensing means, said control means including an operational amplifier having an input coupled to said sensing means and an output, negative feedback means coupled between said input and said output including a filter for rejecting a predetermined frequency, current control means having control and load electrodes with said load electrodes being coupled to the winding means to control the current therein, and integrator and rectifier means coupling said output to said control electrode and applying a direct current control voltage thereto in response to an applied alternating current signal, said amplifier providing an increased signal at said output in response to a signal of a predetermined frequency to cause the control voltage to increase, and said current control means responding to said increase in said control voltage to reduce the current applied to the winding means to control the motor speed.

17. A motor drive system including in combination:

motor means having a stator and a rotor, and means supporting said rotor for rotation, said rotor operating at a first rotary speed and having a portion coaxially surrounding said stator which includes most of the weight of said rotor,

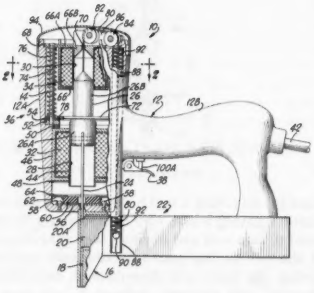
shaft means, and means rotatably supporting said shaft means, and

speed reducing means coupling said rotor to said shaft means for driving said shaft means at a rotary speed less than said first rotary speed,

said rotor being of a construction and operating at a speed to provide a moment to store a predetermined amount of energy, and said shaft means being constructed and operating at a speed to provide a moment to store substantially less energy than said rotor, said speed reducing means applying the moement of said rotor to said shaft means to maintain the rotational speed of said shaft means substantially constant.

B 367,812
ELECTRIC FASTENER DRIVING TOOL
Hazelton H. Avery, Aurora, and Salvatore Morabito, Northlake, both of Ill., assignors to Duo-Fast Corporation, Franklin Park, Ill.
Filed June 7, 1973, Ser. No. 367,812
Int. Cl. B25c *1/06*
U.S. Cl. 227—131 **11 Claims**
Group Art Unit 325
References Cited
UNITED STATES PATENTS

3,434,026	3/1969	Doyle	227/131 X
3,552,627	1/1971	Moreno	227/131 X
3,589,588	6/1971	Vasku	227/132



1. An electric tool for driving fasteners into a workpiece using an electric potential comprising

a housing with a nosepiece structure defining a drive track, a magazine assembly for feeding successive fasteners into the drive track at a given position therein,

fastener driving means including a driver movable in the drive track and an armature for actuating the driver, said driver normally occupying at least a portion of said given position in the drive track to prevent a fastener from entering the drive track,

resilient operating means coupled to the fastener driving means for imparting movement to the driver by resilient force,

winding means magnetically coupled to said armature for stressing the resilient operating means,

and a control circuit coupled to the winding means and energized by the potential for energizing the winding means for a period of time to stress the resilient operating means and then deenergizing the winding means to release the resilient operating means and to momentarily withdraw the driver from said given position in the drive track so that the magazine assembly can feed a fastener into the drive track beneath the driver.

B 346,585

WELDING MANIPULATOR

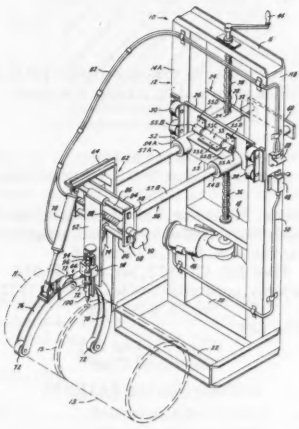
Lamar Travis Valentine, deceased, late of Houston, Tex. (by Ruth Elaine Valentine, executrix), assignor to Welding Processes Company, Tulsa, Okla.

Filed Mar. 30, 1973, Ser. No. 346,585
Int. Cl. B23k 5/00
U.S. Cl. 228—25 7 Claims
Group Art Unit 322

References Cited

UNITED STATES PATENTS

1,782,461	11/1930	Chapman	228/48 X
3,095,501	6/1963	Goekler et al.	228/45 X
3,324,275	6/1967	Peignen	228/29 X
3,665,148	5/1972	Yasenchak et al.	228/45 X



1. Welding manipulator apparatus for use in the welding of abutted ends of two lengths of pipe while they are revolved about their longitudinal axis, comprising:

a frame having spaced apart upright members;

a carriage on said upright members of said frame;

a boom housing mounted with said carriage, said boom housing comprising horizontal cylinder means positioned transversely to said carriage;

pivotal mounting means pivotally connecting said boom housing horizontal cylinder means to said carriage for pivotal movement of said boom housing horizontal cylinder means relative to said frame;

a boom slidably supported in said boom housing horizontal cylinder means and projecting therefrom for movement in forward and rearward directions relative to said frame; a welding head mounted with said boom forwardly of said frame for positioning adjacent to a welding surface and for movements with said boom; and

pipe engaging means mounted with said boom forwardly of said frame for engagement with at least one length of pipe in proximity to the welding surface to be welded for movements in response to variations in the external configuration of the pipe, whereby movements of said pipe engaging means are transmitted to said boom for causing corresponding movements of said welding head.

B 422,467

CENTRIFUGE FOR THE SEPARATION OF MIXTURES OF LIQUIDS

Heinrich Niemeyer, Oelde, Germany, assignor to Westfalia Separator A. G., Oelde Westfalen, Germany

Filed Dec. 6, 1973, Ser. No. 422,467
Claims priority, application Germany, Dec. 12, 1972, 2260617
Int. Cl. B04b 11/06
U.S. Cl. 233—19 A 5 Claims
Group Art Unit 353

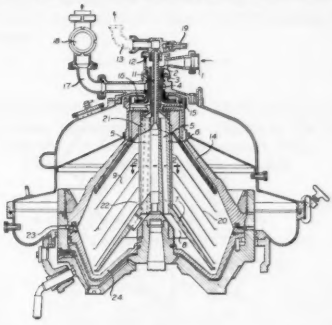
References Cited

UNITED STATES PATENTS

1,950,868	3/1934	Strezynski	233/27
3,047,214	7/1962	Downing	233/28 X
3,765,601	10/1973	Gulley	233/28

FOREIGN PATENTS OR APPLICATIONS

70,778	9/1952	Netherlands	233/19 R
226,456	12/1924	Great Britain	233/27



1. A centrifugal separator for separating a liquid raw material into a specifically lighter component and a specifically heavier component, comprising:

a. a rotatably mounted separator drum providing a separating chamber for the separation and having a distributor coaxially mounted therein for rotation with the drum for receiving material to be separated in the upper part of the drum and conveying it downwardly adjacent the drum axis and directly it radially outwardly adjacent the bottom of the drum,

b. the distributor comprising a plurality of axially extending ribs disposed adjacent and radially outwardly of the axis of the drum in circumferentially spaced relation, the ribs having passages therein for conveying of raw material to the lower part of the drum, the spaces between the ribs providing free communication between the separating chamber and an axially extending center portion of the drum for passage of specifically lighter component to said center portion of the drum,

c. an inlet tube mounted on the distributor for rotation therewith for conveying raw material downwardly into the drum to said passages of the ribs, and a stationary inlet connector for delivering of raw material to the upper end of the inlet tube, and a hermetic seal between the inlet tube and stationary inlet connector,

d. an outlet tube for specifically lighter component mounted on the distributor for rotation therewith for conveying specifically lighter component upwardly from the said center portion of the drum, said outlet tube being disposed within said inlet tube, and a stationary outlet connector for receiving specifically lighter component from the outlet tube, and an hermetic seal between the outlet tube and stationary outlet connector,

e. a paring chamber and paring disc for removal of specifically heavier component, means communicating the paring chamber with the outer portion of the drum for re-

ceiving specifically heavier component therefrom, a discharge line communicating with the paring disc, and a throttle in said discharge line.

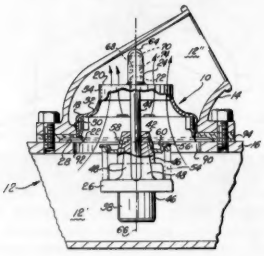
B 321,101
WATERLINE THERMOSTAT AND ASSEMBLY

Frank E. Obermaier, Lombard, and Arthur A. Scott, Mount Prospect, both of Ill., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 4, 1973, Ser. No. 321,101
Int. Cl. F01p 7/16
U.S. Cl. 236—34 **6 Claims**
Group Art Unit 344

References Cited
UNITED STATES PATENTS

1,936,650	11/1933	Wade	137/220
3,173,609	3/1965	Obermaier	236/34
3,448,921	6/1965	Kelly	236/34



6. A thermostat assembly as defined in claim 5 wherein said elliptical opening has a minor axis of distance greater than said diameter of said sleeve portion but less than the diametrical distance of said sleeve portion between said protrusion whereby said thermostat is locked in predetermined position in said outlet casting.

B 450,927
SAFETY SPRAY GUN TRIGGER

John E. Petrovic, Coon Rapids, Minn., assignor to Graco Inc., Minneapolis, Minn.

Filed Mar. 13, 1974, Ser. No. 450,927
Int. Cl. B05b 11/00
U.S. Cl. 239—526 **12 Claims**
Group Art Unit 312

References Cited
UNITED STATES PATENTS

3,410,491	11/1968	Malec	239/526
3,780,953	12/1973	Malec	239/526

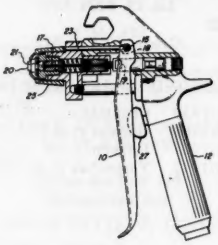
6. A spray gun safety apparatus for diabling the spray gun trigger on removal of the spray tip retainer from the spray gun housing. comprising:

a threaded portion on the spray gun for accepting and securing said spray tip and spray tip retainer;

a pivot pin contacting said trigger with the spray gun housing;

a slotted passage in said spray gun housing for accepting said pivot pin; and

a slidable rod extending between said slotted passage and



said spray tip retainer to hold said pivot pin in an actuating position when said tip retainer is secured.

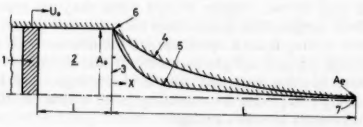
B 380,014
NOZZLE MEANS PRODUCING A HIGH-SPEED LIQUID JET

Lewis A. Glenn; Bo Lemcke, both of Laussane, and Inge Ryhming, Mollie-Margot, all of Switzerland, assignors to Institut Cerac SA, Ecublens, Vaud, Switzerland

Filed July 17, 1973, Ser. No. 380,014
Claims priority, application Sweden, July 19, 1972, 9464/72
Int. Cl. B05b 1/00
U.S. Cl. 239—589 **7 Claims**
Group Art Unit 312

References Cited
UNITED STATES PATENTS

3,088,854	5/1963	Spies, Jr.	239/601 X
3,343,794	9/1967	Voitsekhovsky	239/101
3,520,477	7/1970	Cooley	239/101
3,647,137	3/1972	Naydan	239/102



1. A nozzle means producing a high-speed liquid jet, said nozzle means having an internal cavity to receive a liquid column and leading to a nozzle exit, characterized in that the internal cavity has a continuously converging contour lying within the limits defined by the following two equations:

a) $A/A_o = 1 + (X/L)[(Ae/Ao)^{-1} - 1]^{-1}$

b) $A/A_o = 1 + (X/L)[(Ae/Ao)^{-1/5} - 1]^{-5}$

where

A is the variable internal cross-section of the nozzle cavity;

A_o is the value of A at the nozzle entrance;

A_e is the value of A at the nozzle exit;

L is the nozzle length from entrance to exit; and

X is the variable coordinate along the axis of the jet nozzle.

B 441,416

WEAR RESISTANT LINING FOR GRINDING MILLS

Sven E. Andersson, Chagrin Falls, Ohio, assignor to Trelleborg Rubber Company, Inc., Solon, Ohio

Filed Feb. 11, 1974, Ser. No. 441,416
Int. Cl. B02c 17/22
U.S. Cl. 241—300 16 Claims
Group Art Unit 325

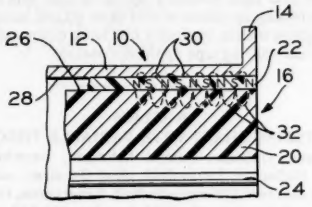
References Cited

UNITED STATES PATENTS

2,909,335	10/1959	Janeno	241/183
3,467,319	9/1969	Rampe	241/182 X

FOREIGN PATENTS OR APPLICATIONS

1,810,920	7/1969	Germany	241/183



1. A lining for an abrasive material handling device having surface means of magnetic material comprising, a layer of wear resistant resilient material, and permanent magnet means attached to said layer for releasably retaining said lining on said surface means by magnetic attraction.

B 421,362

APPARATUS FOR PACKAGING LINEAR MATERIAL

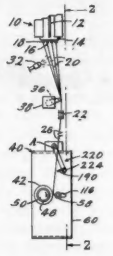
Alex P. Symborski, 621 Moull St., Newark, Ohio 43055

Filed Dec. 3, 1973, Ser. No. 421,362
Int. Cl. B65h 54/02
U.S. Cl. 242—18 G 18 Claims
Group Art Unit 246

References Cited

UNITED STATES PATENTS

3,090,570	5/1963	Cunningham et al.	242/18 G
3,109,602	11/1963	Smith	242/18 G
3,281,224	10/1966	Lowe, Jr.	242/18 G
3,408,012	10/1968	Smith et al.	242/18 G



1. Apparatus for packaging linear material comprising:
a rotatable collector upon which linear material is wound in a zone as a package;
means for rotating the collector; and
means effective to move the linear material between the package formation zone along the collector and a temporary winding zone, such means including a movably mounted member having a slot open at one end, the slot being oriented so that its lengthwise dimension extends in a direction transversley of the axis of rotation of the collector with the open end thereof facing towards the collector, the member providing a pair of spaced apart opposing guide surfaces for facilitating movement of the linear material into the slot, such guide surfaces diverging from the open end of the slot to form a tapered guide space open at its larger end for introduction of the linear material, the guide space communicating at its smaller end with the slot, means for moving the member at the beginning of package build along a path effective to move linear material in the slot from collection at the temporary winding zone into the package formation zone and for moving the member laterally of the axis of rotation away from the collector to disengage the linear material from the slot during package formation member at the end of package formation laterally of the axis of rotation towards the collector to engage the linear material in the slot and for moving the member along a path effective to move such material in the slot out of the package formation zone.

B 367,640

STERILE SURGICAL CORD AND TUBE RETRACTOR

Leslie C. Olson, Minneapolis, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed June 6, 1973, Ser. No. 367,640
Int. Cl. B65h 75/36
U.S. Cl. 242—47.5 4 Claims
Group Art Unit 246

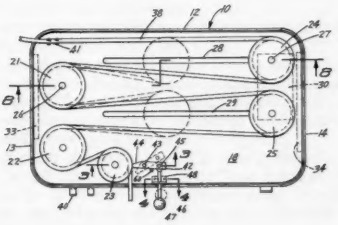
References Cited

UNITED STATES PATENTS

1,384,153	7/1921	Roos	242/47.5
2,157,887	5/1939	Davis	242/47.5 UX
2,466,996	4/1949	Monnot	242/47.5
2,482,851	9/1949	Jennewein	242/47.5 X
2,560,204	7/1951	Andren	242/47.5 X
2,730,183	1/1956	Svoboda	242/47.5 X
2,896,659	7/1959	Erickson	242/47.5 X
2,944,748	7/1960	Carnagua et al.	242/47.5
3,180,585	4/1965	Pusey et al.	242/47.5
3,429,516	2/1969	Sharp et al.	242/47.5

FOREIGN PATENTS OR APPLICATIONS

442,556	2/1936	Great Britain	242/47.5



1. A retractor for elongated flexible linear tube and cord elements used in surgical procedures, said retractor comprising:
A. a horizontally disposed housing having vertical end walls and side walls and a removable top tray,
B. a plurality of stacked horizontal parallel vertically spaced apart retractor plates within said housing,
C. a plurality of laterally spaced apart peripherally grooved wheels fixedly mounted on the top side of each of said retractor plates adjacent one end thereof, said wheels being journaled for rotation about vertical axes,

D. a plurality of laterally spaced apart peripherally grooved wheels movably mounted on the top side of each of said retractor plates adjacent the opposite end thereof for reciprocable movement relative to said fixedly mounted wheels, said wheels being journaled for rotation about vertical axes,

E. a plurality of longitudinal slots in each of said retractor plates in number corresponding to said reciprocable wheels, said reciprocable wheels being mounted for movement in said slots,

F. resilient tension means connected to said reciprocable wheels for normally urging said wheels away from said fixedly mounted wheels,

G. a further peripherally grooved wheel fixedly mounted on the top side of each of said retractor plates adjacent one side edge of said plate between the first mentioned fixedly mounted wheels and reciprocable wheels,

H. a first opening in said housing for entry of a linear element to each of said retractor plates,

I. fastening means on each of said retractor plates adjacent said entry opening for securing a linear element to each plate, whereby, when said linear element is threaded in a serpentine path around said reciprocable and fixedly mounted wheels, said fastening means resists pulling tension on the free end of said element sufficient to cause movement of the reciprocable wheels toward the fixedly mounted wheels resulting in shortening of the serpentine path and extension of the element, and

J. a further exit opening in said housing adjacent each said further fixedly mounted wheel.

B 289,471

METHOD AND APPARATUS FOR LOADING CASSETTES WITH MAGNETIC TAPE

James L. King, Sudbury, Mass., assignor to King Instrument Corporation, Hudson, Mass.

Filed Sept. 15, 1972, Ser. No. 289,471

Int. Cl. B65h *35/02*

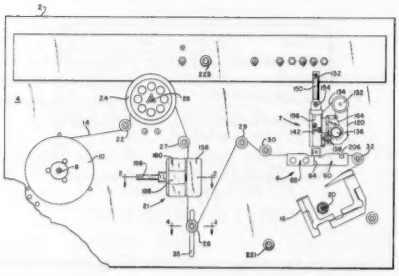
U.S. Cl. 242—56.8 **4 Claims**

Group Art Unit 246

References Cited

UNITED STATES PATENTS

3,634,172	1/1972	Fujii	156/506
3,693,900	9/1972	Bohn	242/56 R
3,722,810	3/1973	Kendall	242/56 R



2. Apparatus for tailoring magnetic tape comprising:

a first station having punching means for punching a hole in a tape;

a second station having a splicing block adapted to support a tape;

knife means operative to sever a tape supported on said splicing block;

splicing tape applicator means for applying an adhesive splicing tape to the adjacent ends of two different tapes supported on said splicing block;

means including a winding spindle adapted to support a tape cassette hub, and drive means for rotating said winding spindle for transporting a tape through said first and second stations and winding it on the hub supported by said spindle; and

control means for operating the aforementioned means in the following sequence: actuating said punching means, operating said knife means, actuating said splicing tape applicator means, operating said drive means, terminating operation of said drive means, actuating said punching means, operating said drive means for a time sufficient for said winding spindle to wind a length of tape in excess of the length of the path followed by a tape passing from said tape punching means to said splicing block, terminating operation of said drive means, actuating said punching means, operating said knife means, and operating said splicing tape applicator means.

B 352,965

WINDING SHAFT WITH VARIABLE TORQUE

Willi Jores, Opladen; Helmut Lehmann, Leverkusen, and Franz Hoffacker, Langenfeld, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 20, 1973, Ser. No. 352,965

Claims priority, application Germany, Apr. 25, 1972, 2220159

Int. Cl. B65h *19/04*

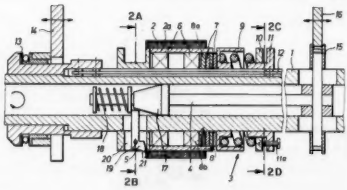
U.S. Cl. 242—56.9 **9 Claims**

Group Art Unit 246

References Cited

UNITED STATES PATENTS

2,431,130	11/1947	Luchonsky	242/56.9
3,322,361	5/1967	Young	242/56.9
3,622,096	11/1971	Young	242/56.9
3,669,369	6/1972	Emich	242/56.9
3,702,687	11/1972	Hall	242/56.9



1. Apparatus for winding bands on to cylindrical tubular supports, comprising a rotatable shaft having a plurality of winding sleeves each having a cylindrical surface adapted to carry a cylindrical tubular support and cause it to rotate with the sleeve, each sleeve being independently rotatable on the shaft and, associated with each sleeve, a friction drive from the shaft and means for adjusting the torque applied to the sleeve by the friction drive.

B 396,551

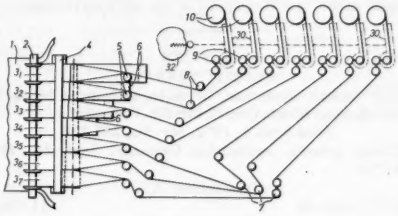
AUTOMATIC BAND-WINDING MACHINE

Willi Jores, Opladen; Franz Hoffacker, Langenfeld; Bernhardt Kreit; Helmut Lehmann, both of Leverkusen, and Herbert Hardenbicker, Bergisch Gladbach, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 225,154, Feb. 10, 1972, Pat. No. 3,777,998. This application Sept. 12, 1973, Ser. No. 396,551
Claims priority, application Germany, Feb. 13, 1971, 2106865
Int. Cl. B65h *19/26, 27/00*
U.S. Cl. 242—76 6 Claims

Group Art Unit 246
References Cited
UNITED STATES PATENTS

1,346,356	2/1920	Wenderhold	242/76
1,645,882	10/1927	Stuber	242/76
2,111,054	3/1938	Paul	242/76
3,218,000	11/1965	Blackman	242/76 X



1. A threading and securing device for an automatic band winding machine for a winding device for winding a length of said band upon a core, a movable threading and guiding unit operatively associated with said winding device for threading and guiding the end of a narrow band onto said winding device, a cutter on said movable threading and guiding unit for severing said band after a predetermined length has been wound onto a roll upon said winding device, said winding device having connected with it a motion providing device, said movable threading and guiding device being disposable in alignment with said winding device, said motion providing device having drive means for rotating said winding device, a winding starting casing operatively arranged for disposition about said winding head for guiding the starting end of said bands upon said core when disposed upon said winding head, translating means connected to each of said winding starting casings for engaging them about said winding head carrying a core to start the end of a band to be securely wound on said core about itself and for removing said winding starting casing after a winding has been securely started upon said roll, and said threading and guiding unit being movably mounted to freely guide said winding upon said core in an increasing diameter.

B 405,160

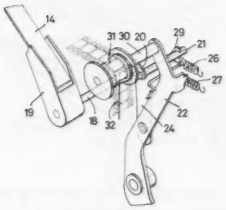
GUIDING DEVICE FOR AN AUTOMATIC FILM LOADER

Yoshinari Minakawa, 1-5-1 Chome, Gakubunden-cho, Nishinomiya, and Akinobu Sashida, 20-12 Aza-Mijata, Koga, Itami, both of Japan

Filed Oct. 10, 1973, Ser. No. 405,160
Claims priority, application Japan, Feb. 3, 1973, 48-14167
Int. Cl. G03b *1/04*; G11b *15/32*; B11b *15/32*
U.S. Cl. 242—195 5 Claims

Group Art Unit 246
References Cited
UNITED STATES PATENTS

3,712,558	1/1973	Johnson et al.	242/195
3,712,719	1/1973	Zanner, Jr.	352/73



1. A device for guiding a film strip to a takeup reel of a projector and the like, comprising:

means provided in said takeup reel for automatically taking up the leading end of the film strip;

an elongated guide plate means for guiding the leading end of the film strip toward a core of the takeup reel, said elongated guide plate means pivotally mounted on the projector and adapted to be positioned within said takeup reel and to withdraw therefrom;

a link member pivotally mounted on said projector;

holding means operatively coupled to said link member for releasably holding said guide plate means within said takeup reel, whereby the leading end of the film is directed toward the core of the takeup reel;

spring means interposed between said link member and said projector and cooperating with said holding means; and guide roller means for guiding the film strip to said guide plate means, said guide roller means rotatably mounted on said link member, said link member adapted to pivot toward said guide plate means against said spring means due to tension of the film strip acting on said guide roller means when the leading end of the film strip is taken up by the core of the takeup reel, thereby releasing said guide plate means from said holding means, whereby said guide plate means pivotally withdraws from said takeup reel.

B 339,059
CARTRIDGE FOR RECORDING MEDIA

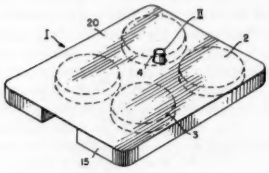
Manfred Moessner, 14 Hebelstrasse, 6901 Eppelheim, and Gerhard Kreutze, 2 Beethovenstrasse, 6901 Bammental, both of Germany

Filed Mar. 8, 1973, Ser. No. 339,059
Int. Cl. G03b *1/04*; **G11b** *15/32, 23/04*
U.S. Cl. 242—198 **7 Claims**
Group Art Unit 246

References Cited

UNITED STATES PATENTS

2,676,766	4/1954	Ross et al.	242/76
2,911,756	11/1959	Geary	43/114
3,148,398	9/1964	Thomas, Jr.	15/104
3,156,424	11/1964	Namenyi-katz	242/180
3,692,956	9/1972	Northrup	179/100.2 Z
3,751,043	8/1973	Bracci	274/4 C



1. For use in connection with a recording and/or playback apparatus of the type having driving means including spindles, having recording-media-scanning means and having a cartridge-locking and/or -unlocking mechanism controlled by a manually operable member,

a cartridge having

a substantially rectangular housing with a bottom wall, a top wall and side walls,

two pairs of spools designed to carry packs of recording media in the form of strips, the first for the recording of visual information and the second for the recording of audio information, and

means for guiding said strips,

at least one of said side walls having apertures designed to permit passage therethrough of said scanning means and said bottom and top walls having mutually facing openings disposed between the locations of said spools and said strips and designed so that, with the cartridge placed in position on said apparatus, said member projects through at least one of said openings and is accessible for manual operation from outside of said apparatus and said cartridge.

B 396,025
SLOW-SPEED TAPE RECORDER DRIVE MECHANISM

William D. Richards, Medway, Mass., assignor to American Optical Corporation, Southbridge, Mass.

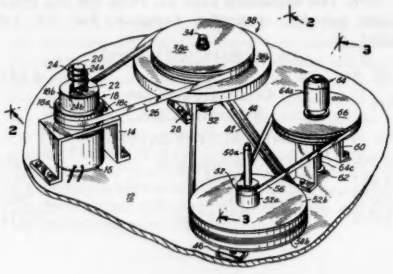
Filed Sept. 10, 1973, Ser. No. 396,025
Int. Cl. G03b *1/04*; **B11b** *15/32*
U.S. Cl. 242—206 **8 Claims**
Group Art Unit 246

References Cited

UNITED STATES PATENTS

3,610,533	10/1971	Matsuyama	242/206
3,767,137	10/1973	Rickt et al.	242/206

1. A slow-speed tape recorder drive mechanism comprising a synchronous AC motor, a flywheel, first belt means for driving said flywheel from said motor, a capstan pulley having a capstan extending in the axial direction therefrom, second belt means for driving said capstan pulley from said flywheel, a take-up pulley having a take-up spindle extending in the axial direction therefrom, and means including at least one additional belt means for driving said take-up pulley from said



flywheel, said first and second belt means being operative to control the surface speed of said capstan to be less than one inch per second and the inertia of the flywheel to be at least 25 times as great as the inertia of said capstan pulley and capstan at the operating speed of the drive mechanism.

B 287,270
PLASTIC BEARING

Reiner Peschke, Ottobrunn, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Sept. 8, 1972, Ser. No. 287,270
Claims priority, application Germany, Sept. 14, 1971, 2145771
Int. Cl. B64c *3/38*
U.S. Cl. 244—46 **11 Claims**
Group Art Unit 315

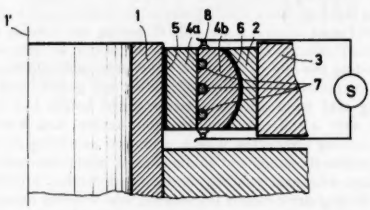
References Cited

UNITED STATES PATENTS

2,352,206	6/1944	Kendall	308/77
2,443,403	6/1948	Smith	308/76
2,451,124	10/1948	Smith	308/77
2,928,698	3/1960	Feighofen	308/77
3,279,721	10/1966	Dethman	308/238

FOREIGN PATENTS OR APPLICATIONS

598,040	6/1934	Germany	308/77



1. In a bearing assembly particularly for rotatably supporting shaft means of a movable wing on an aircraft to effect a variation in the amount of sweepback, said bearing assembly having means defining a freely rotatable spacer positioned between said shaft means and a frame structure of said aircraft, said spacer means thereby defining a pair of radially spaced interfaces, and plastic lubricating layers means positioned between one of said pair of interfaces and in engagement with said spacer means and with one of said shaft means and said frame structure, the improvement comprising:

means defining a passageway in said spacer means intermediate said pair of interfaces; and

means defining a heating medium in said passageway means for effecting a uniform, homogeneous heat travel both radially inwardly and outwardly of said spacer means to heat both of said pair of interfaces and thence said plastic lubricating layer means; and

energy supply means for supplying energy to said heating medium in said passageway means in said freely rotatable spacer means.

B 384,773

ANNULAR MOMENTUM CONTROL DEVICE USED FOR STABILIZATION OF SPACE VEHICLES AND THE LIKE

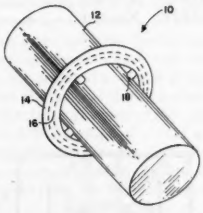
Willard W. Anderson, Yorktown, and Nelson J. Groom, Newport News, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Aug. 1, 1973, Ser. No. 384,773
Int. Cl. B64g *1/00*
U.S. Cl. 244—165 **9 Claims**
Group Art Unit 315

References Cited

UNITED STATES PATENTS

1,551,347	8/1925	Trombetta	318/161
3,019,555	2/1962	Poticha	46/50 X
3,370,377	2/1968	Frangos	46/50
3,477,298	11/1969	Howe	74/5.7 X
3,480,811	11/1969	Grosbard	310/156
3,582,019	6/1971	Pisacane	244/1 SA
3,621,603	11/1971	DeGelder	46/50 X
3,731,984	5/1973	Habermann	308/10



1. In a vehicle of the type having an annular momentum storage device used for stabilization about at least two axes perpendicular to an axis of rotation of the annular momentum storage device, the combination comprising:

a flight vehicle,

an annular momentum storage device for said vehicle and including a rotor having an annulus therein;

a plurality of bearing surfaces disposed in close proximity with said rotor for rotatably supporting the same;

means for imparting rotary motion to said rotor;

an annular housing enclosing said rotor, said plurality of bearing surfaces, and said means for imparting rotary motion to said rotor;

a surface defining the body of said vehicle, said body being disposed within the annulus of said housing and coaxial with the axis of rotation of said rotor; and

means attaching said housing to said surface defining the body of said vehicle.

B 390,732

IRONING BOARD ATTACHMENT

Flora Wayne, 7829 S. Chappel, Chicago, Ill. 60649

Filed Aug. 23, 1973, Ser. No. 390,732
Int. Cl. F16m *13/00*
U.S. Cl. 248—311 **3 Claims**
Group Art Unit 355

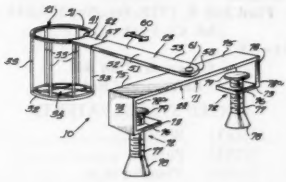
References Cited

UNITED STATES PATENTS

457,458	8/1891	Britton et al.	248/311
1,288,611	12/1918	Jones	248/285
1,751,691	3/1930	Flath	248/285
1,753,875	4/1930	Baumann	248/103
1,957,353	5/1934	Piersall	248/311
2,488,255	11/1949	Allen	248/51
3,535,508	10/1970	Warshauser	248/226 A
3,568,970	3/1971	Mallett	248/226 A
3,734,439	5/1973	Wintz	248/224

FOREIGN PATENTS OR APPLICATIONS

674,016	6/1952	Great Britain	248/282



1. An ironing board attachment intended for holding a starch can and the like adjacent the top surface of an ironing board, comprising:

a hollow cylindrical basket open at the top end and closed at the bottom end and formed of skeleton frame members including top and bottom concentrically disposed longitudinally spaced apart ring members interconnected about their circumferal peripheral edges by longitudinally extending rods spaced circumferally thereabout and secured to the top and bottom rings respectively, the bottom ring including a plurality of criss-crossing rod like members disposed in the plane defined by the bottom ring and forming a skeleton type end frame platform for the basket;

an elongated thin rectangular tongue forming member having one end connected to the peripheral edge of the top ring of the basket with the opposite free end extending radially outwardly therefrom normal to the axis of the basket;

a clamping member adapted to be removably secured to the peripheral edges of the ironing board, the clamping member comprising a pair of generally C-shaped brackets spaced apart in confronting relationship and each including an inwardly directed bottom member, a side member connected to each bottom member at the outer edge thereof and extending upwardly therefrom, and an inwardly directed top member connected to each bottom member at the outer edge thereof and extending upwardly therefrom, and an inwardly directed top member connected to the associated side member and extending substantially parallel to the bottom member, a spacing bar formed integrally with the top member connecting the same and the associated brackets together, each bottom member having a threaded aperture disposed centrally thereof and extending therethrough, each aperture having associated therewith a threaded elongated bolt like member adapted to rotate about its axis and

having an enlarged head portion permitting each grasping thereof between the fingers of an individual's hand, and also including an inner terminal end disposed intermediate the interior surfaces of the bottom member and associated top member, each terminal end including a circular flat disc disposed concentric with the bolt member and pivotally attached thereto about its axis for rotation relative thereto; and

an elongated arm member having an elongated rectangularly shaped channel extending longitudinally therethrough, one end of the arm being pivotally attached to the clamping member for pivotal movement of the arm thereabout in a plane substantially parallel to the plane of the ironing board top surface when the attachment is positioned thereon, the channel opening out the opposite free arm end and adapted to slidingly receive therein in a telescopic manner the basket tongue member so as to support the basket adjacent a peripheral edge of the ironing board.

B 377,833
VARIABLE BLEED VALVE

Alfred H. Rolfe, Pottersville, N.J., assignor to Automatic Switch Company

Filed July 9, 1973, Ser. No. 377,833
Int. Cl. F16k *31/385*
U.S. Cl. 251—35 **10 Claims**
Group Art Unit 341

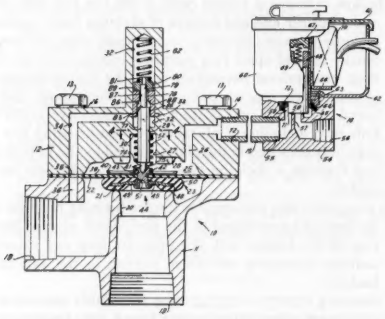
References Cited

UNITED STATES PATENTS

1,828,517	10/1931	White	251/35
2,000,297	5/1935	Putnam	251/35 X
2,310,130	2/1943	Thumim et al.	251/35 X
3,061,264	10/1962	Rupert	251/35
3,177,891	4/1965	Reese	251/35 X

FOREIGN PATENTS OR APPLICATIONS

117,468	0/1943	Australia	251/35



1. A valve comprising:

a. a valve body having an inlet port, an outlet port, and an orifice between said ports surrounded by a valve seat;

b. a valve member within said body, said valve member being movable between a valve-closed position, in which it engages said valve seat, and a valve-open position, in which there is a maximum possible spacing between said valve member and said valve seat;

c. a chamber on the side of said valve member opposite said valve seat;

d. means for relieving the pressure in said chamber when desired;

e. a bleed passageway coupling said inlet port of the valve to said chamber;

f. a blocking means movable with respect to said bleed passageway between a blocking position in which it obstructs flow therethrough into said chamber and a flow-permitting position in which it permits full flow therethrough into said chamber, said blocking means being arranged in its blocking position when said valve member is in its valve-closed position; and

g. means responsive to only the final portion of the movement of said valve member from its valve-closed position to its valve-open position for moving said blocking means from its blocking position to its flow-permitting position and responsive to only the final portion of the movement of said valve member from its valve-open position to its valve-closed position for moving said blocking means from its flow-permitting position to its blocking position, each of said final portions amounting to less than one-half the distance through which said valve member moves between its valve-open and valve-closed positions,

whereby fluid flow from said inlet port to said chamber is obstructed until the valve is almost completely open at which time such flow is permitted and full fluid flow from said inlet port to said chamber is permitted until the valve is almost completely closed at which time such flow is obstructed.

B 290,328
COOKING UTENSIL

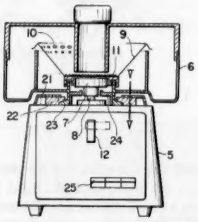
Kenji Wanlishi, and Koichiro Ninomiya, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 19, 1972, Ser. No. 290,328
Claims priority, application Japan, Sept. 22, 1971, 46-73388
Int. Cl. B01f *7/16*
U.S. Cl. 259—108 **10 Claims**
Group Art Unit 242

References Cited

UNITED STATES PATENTS

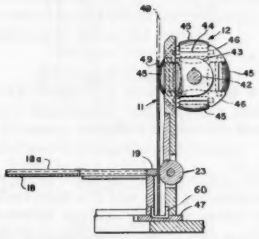
2,798,700	7/1957	Corbett	259/DIG. 35
2,905,452	9/1959	Appleton	99/348
3,220,450	11/1965	Aronson	259/108
3,315,946	4/1967	Nissman	259/108



5. A utensil according to claim 4, wherein said all of said sliding members are arranged in a top portion of said base member to be horizontally slidable.

B 365,855
SHEET FEEDING EQUIPMENT
Robert J. Miller, Salford, Pa., assignor to Decision Data Computer Corporation, Horsham, Pa.
Filed June 1, 1973, Ser. No. 365,855
Int. Cl. B65h *3/06*
U.S. Cl. 271—111 **18 Claims**
Group Art Unit 313
References Cited
UNITED STATES PATENTS

1,183,333	5/1916	Wright	271/4
2,883,929	4/1959	Eichenbaum et al.	271/9 X
3,160,411	12/1964	Fiehl	271/10 X
3,411,768	11/1968	Gatti	271/10
3,590,970	7/1971	Kornylak	193/37

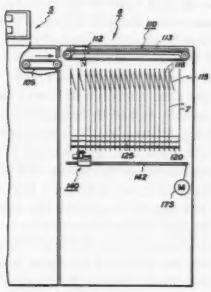


5. Punched card equipment for feeding punched cards from a supply deck, feeding means offset from one edge of the deck for sequentially feeding cards in a path in a direction paralleling the plane of cards in the deck, and mechanism for transferring individual cards edgewise from an end of the deck in a direction transverse to said one direction and into said feed path, said mechanism including a transfer assembly, said assembly being mounted for rotation on an axis offset from and paralleling the cards in the deck and further including a plurality of rotatable friction elements, each said element having its rotative axis generally oriented so that it is tangent to a circle having as its center the axis of the assembly, said elements being oriented so that upon rotation of the assembly a friction element engages with the surface of a card and transfers the card to the sequential feeding means, intermittently operable means for rotation of the assembly by an amount which offsets said card into said feed path, the friction elements being freely rotatable about their own axis so that any element in contact with the card as it is advanced by the sequential feeding means permits unrestricted card advancement in said direction paralleling the plane of cards in the deck.

17. In a card feed mechanism, first and second card hoppers, each being adapted to store a deck of cards and being positioned so that the cards in the hopper are oriented in planes which are acutely angled with respect to one another, feeding means located between the two hoppers, and comprising continuously driven friction roll means adjacent each magazine, said roll means being offset from the cards in each magazine, said friction roll means being oriented to move cards along converging feed paths, there being one feed path for each hopper selectively operable mechanism for offsetting individual cards edgewise from the end of the deck in each hopper into position to be advanced by said friction roll means along the feed path associated with that hopper, said offsetting mechanism including a mounting shaft adjacent each deck being spaced in parallel relationship with the cards in the deck and including a friction roller element carried by each said shaft and being freely rotatable on an axis which is normal to a radius extending from the axis of the shaft, said roller element being movable upon rotation of said shaft into contact with the surface of the end sheet to offset the end card in the magazine, means for selectively operating said offsetting mechanism to offset cards from one or the other of said decks, and pinch roll means operable when a card is in offset position for pressing the offset card into contact with said friction roll means and means for operating said pinch roll means following movement of a card to said offset position.

B 339,675
SORTING APPARATUS
Anthony Howard, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Mar. 9, 1973, Ser. No. 339,675
Int. Cl. B65h *29/60*
U.S. Cl. 271—173 **4 Claims**
Group Art Unit 313
References Cited
UNITED STATES PATENTS

2,919,917	1/1960	Worswick	271/173
3,709,492	1/1973	Baker et al.	271/173
3,721,435	3/1973	Zanders	271/173
3,774,902	11/1973	Schulze	271/64 X
3,788,640	1/1974	Stemmle	271/64



1. Sorting apparatus comprising:
a frame;
a horizontal array of closely spaced parallel vertically extending tray members slidably supported on said frame;
conveyor means including a moving deflector member for directing sheets into a selected tray member;
tray indexing apparatus moving in the same direction and in timed relation with said deflector member to slide each tray member to increase the inlet opening of the tray member receiving a sheet,
wherein said tray indexing apparatus includes at least one pawl member carried on a traveling head member which is reversibly driven;
wherein said pawl member is solenoid actuated to move into position to engage a tray member.

B 350,843

SEAL AND GROOVE SET FOR DISC BRAKE ACTUATOR

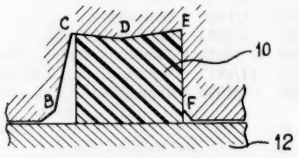
Jean-Pierre Gautier, Saint-Denis, France, assignor to Societe Anonyme D.B.A.

Filed Apr. 13, 1973, Ser. No. 350,843
Claims priority, application France, Apr. 25, 1972, 72.14593
Int. Cl. F16k 9/00
U.S. Cl. 277—170 4 Claims
Group Art Unit 243

References Cited

UNITED STATES PATENTS

1,726,380	8/1929	Blomgren	277/171
2,019,757	11/1935	Loweke	277/171
2,798,779	7/1957	Swartz et al.	277/173
3,218,051	11/1965	Doetsch	277/177
3,377,076	4/1968	Burnett	277/171



1. In a disc brake having a housing defining a cylinder therewithin having a cylindrical surface, a circumferentially extending groove in said cylindrical surface; a seal having a substantially square cross section disposed in said groove, said groove having a first flank extending substantially perpendicular to the axis of said cylinder and a second flank extending obliquely to said axis of the cylinder, and a bottom flank interconnecting the first and second flanks having an annular ridge projecting radially inwardly toward the axis of said cylinder, said ridge being defined by the intersection of a first cone with a second cone, said first and second flanks intersecting said first and second cones respectively, the intersection of the first flank with the first cone defining a first circle, the intersection between the second cone and the second flank defining a second circle, the intersection of said cones at said ridge defining a third circle in a plane between the plane of the first and second circles, the plane of the third being nearer to the plane of the second circle than to the plane of the first circle.

B 380,338

REAR WHEEL SUSPENSION FOR A VEHICLE HAVING A BEAM AXLE

Stephen John Crouch, 7 Highwayman's Croft, Coventry, England

Filed July 18, 1973, Ser. No. 380,338
Claims priority, application Great Britain, Aug. 23, 1972, 39342
Int. Cl. B60g 11/42
U.S. Cl. 280—124 R 4 Claims
Group Art Unit 316

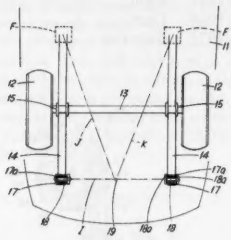
References Cited

UNITED STATES PATENTS

2,973,951	3/1961	Billing	267/54 A
3,250,546	5/1966	Allison	267/54 A
3,596,923	8/1971	Nakamura	267/54 R
3,693,963	9/1972	Leighton	267/54 A

1. In a rear wheel suspension for a vehicle having a beam axle which supports the vehicle structure through two leaf spring assemblies, disposed perpendicular to and near opposite ends of the axle; the rear end of each assembly being coupled to the vehicle structure by rear resilient means having greater resistance to displacement of the rear end of the assembly relative to the structure in a direction parallel to the ground plane and parallel to the axle than to displacement of the rear end in a direction parallel to the ground plane and at right angles to the axle; the improvement comprising:

first front resilient means coupling the front end of one assembly to the vehicle structure and second front resilient means coupling the front end of the other assembly to said structure, said first front resilient means providing greater resistance displacement of the front end of said



one assembly relative to the structure in the direction of a first line extending from said first front resilient means to a point behind said axle midway between said rear resilient means than to the displacement of the front end of the assembly in a direction parallel to the ground plane and at right angles to said line, while said second front resilient means provides a greater resistance to the displacement of the front end of the other of said assemblies relative to the structure in the direction of a second line extending from said second front resilient means to said point than to the displacement of the front end of said other assembly in a direction parallel to the ground plane and at right angles to said line.

B 309,499

OCCUPANT RESTRAINT SYSTEM

Brook A. Lindbert, Utica; Edward H. Mertz, Birmingham, and Wesley L. Mc Collum, Brighton, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1972, Ser. No. 309,499
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB 4 Claims
Group Art Unit 316

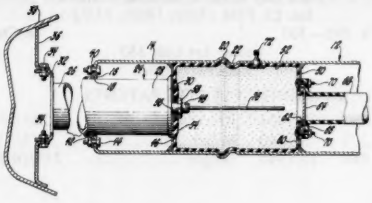
References Cited

UNITED STATES PATENTS

2,074,469	3/1937	Haynes	293/63
2,555,436	6/1951	Druilhet	188/1 C
3,097,725	7/1963	Peterson	188/1 C
3,146,014	8/1964	Kroell	293/70
3,495,474	2/1970	Nishimura et al.	180/91
3,495,675	2/1970	Hass et al.	180/103
3,654,412	4/1972	Haruna	180/91
3,718,332	2/1973	Jones	280/150 AB

1. The combination comprising, an automotive vehicle having a frame including a controlled mechanically deformable frame portion for absorbing high range impact forces, an impact member, low range energy absorbing means mounting the impact member on the deformable portion of the frame, the frame portion remaining undeformed during absorption of low range impact forces by the energy absorbing means, the energy absorbing means transferring high range impact forces to the deformable portion of the frame to initiate deformation thereof and absoprtion ot such high range forces, a self con-

tained source of pressure fluid within the deformable portion of the frame, an inflatable occupant restraint, mechanically rupturable means normally blocking communication of the source with the restraint, and mechanical rupturing means



operable by the low range energy absorbing means during mechanical deformation of the frame portion to rupture the rupturable means and establish communication of the source with the restraint to inflate the restraint.

B 259,236

PROTECTION DEVICE FOR VEHICLE PASSENGERS

Bela Barenyi, Maichingen, and Hermann Renner, Magstadt, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed June 2, 1972, Ser. No. 259,236

Claims priority, application Germany, June 4, 1971, 2127688

Int. Cl. B60r *21/02*

U.S. Cl. 280—150 B **11 Claims**

Group Art Unit 312

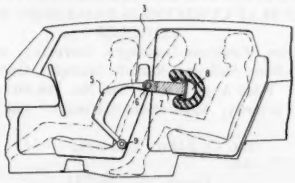
References Cited

UNITED STATES PATENTS

2,740,642	4/1956	Atwood	280/150 SB
3,105,702	10/1963	Larson	280/150 B
3,178,225	4/1965	Bayer	297/386
3,198,543	8/1965	Presunka	280/150 B
3,351,382	11/1967	Davies	280/150 SB
3,468,556	9/1969	Smith	280/150 B
3,494,633	2/1970	Malloy	280/150 B
3,620,569	11/1971	Mathis	280/150 SB
3,690,696	9/1972	Lincoln	280/150 SB

FOREIGN PATENTS OR APPLICATIONS

1,150,085	4/1969	Great Britain	297/389



1. In a protection device for front and rear seat vehicle passengers, said device being of the type having an impact means pivotally mounted by at least one pivotal connecting means from at least the vehicle center columns approximately in proximity to front seat backrests of the vehicle so that the impact means are selectively provided in a substantially horizontal use position for the protection of rear seat passengers and in a substantially upright rest position, and said device having safety belt means for protecting front seat passengers, wherein the improvement comprises said at least one pivotal connecting means simultaneously including at least one upper fastening means for said safety belt means.

6. In a protection device for front and rear seat vehicle passengers, said device having an impact means pivotally mounted by pivotal connecting means from each vehicle center column approximately in proximity to front seat backrests of the vehicle so that the impact means are selectively provided in a substantially horizontal use position for the protection of rear seat passengers and in a substantially upright rest position, and said vehicle having safety belt means for protecting front seat passengers, wherein the improvement comprises said pivotal connecting means simultaneously including an upper fastening means for said safety belt means, and

wherein each of said safety belt means are four-point safety belt means, and further wherein an auxiliary bearer means secured to the impact means extends within the area between the backrests of the front seats essentially in the vehicle longitudinal direction, said upper fastening means for each four-point safety belt means including an upper central supporting point being arranged at the auxiliary bearer means and an upper outer fastening point at the pivotal connecting means, said upper central supporting point and said upper outer fastening point of each four-point safety belt means being approximately aligned.

B 382,840

LATERALLY SHIFTABLE HITCH WITH OPTIONAL FREE MOVING COUPLER

Adolph Hans Friedebach, Toledo, Ohio, assignor to Keegan Steel Fabricating Co., Inc., Toledo, Ohio

Filed July 26, 1973, Ser. No. 382,840

Int. Cl. B60d *1/00*

U.S. Cl. 280—456 R **9 Claims**

Group Art Unit 311

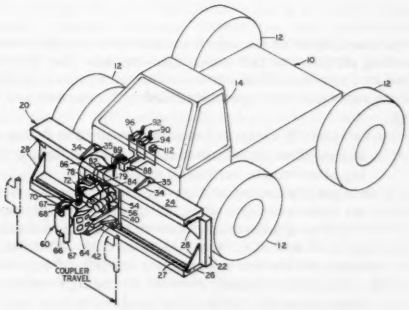
References Cited

UNITED STATES PATENTS

1,350,962	8/1920	Flory	280/469 X
1,637,854	8/1927	Burback	280/469
2,253,420	8/1941	Cupal	280/469 X
3,118,688	1/1964	Stilley	280/447
3,178,203	4/1965	Elliot	280/470
3,212,793	10/1965	Pietroroia	280/DIG. 9
3,388,928	6/1968	Poker et al	280/456 R

FOREIGN PATENTS OR APPLICATIONS

375,357	3/1921	Germany	280/469



1. In a self-propelled vehicle having a railroad coupler mounted on a plate freely slidable in a horizontal track across one end of said vehicle, the improvement comprising:

A. rack means along said track,

B. pinion means mounted on said plate engageable with said rack means,

C. motor means for driving said pinion means to move said plate back and forth along said track, and

D. clutch means between said motor means and said pinion means for disconnecting said pinion means from said motor means when said motor means is not operating, whereby said plate is free to move along said track means.

B 380,312
TWIST LOCK JOINT FOR CONCRETE FILLED, TELESCOPING SECTIONS

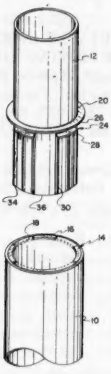
Bill Archer, Meridian, and John Lewis Low, Laurel, both of Miss., assignors to Arlo, Inc., Laurel, Miss.

Continuation of Ser. No. 229,382, Feb. 25, 1972, abandoned. This application July 18, 1973, Ser. No. 380,312
Int. Cl. F16l *13/10*
U.S. Cl. 285—290 **6 Claims**
Group Art Unit 353

References Cited

UNITED STATES PATENTS

426,924	4/1890	Costigan	285/290
526,097	9/1894	Anderson	285/290
2,234,957	3/1941	Boynton	285/290 X
2,702,926	3/1955	Rahaim	403/298



1. In a column of the type formed from a plurality of interlocking sections stacked with respect to each other and rigidized by pumping of fluid concrete therein, a joint comprising:
A. an outer telescoping section filled with concrete and having:
i. an inwardly extending stop ring secured to its top with at least three radially inwardly extending flanges defining intermediate peripheral slots;
B. an inner telescoping section filled with concrete, having:
i. an outwardly extending peripheral vertical support band secured adjacent its bottom, such that said support band and said stop stop ring abut each other, as said sections are stacked with respect to each other; and
ii. at least three radially outward extending flanges, positioned beneath said support band, so as to be registrable and said stop ring peripheral slots during stacking of said sections and lockingly engageable with and under said stop ring inwardly extending flanges upon twisting of said inner section with respect to said outer section; and
iii. at least three longitudinally extending splines positioned under the said flanges, so as to align said inner section with respect to said outer section, concrete filling the vertical interstices defined by said splines between portions of said sections adjacent said stop ring and locking band; and
iv. said splines being further characterized as having a greater outside diameter than said flanges.

B 376,799
SEALED COUPLING FOR EXHAUST PIPE SECTIONS

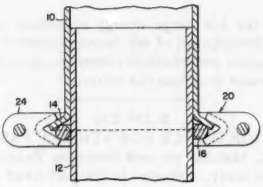
Mohindar Singh Teja, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed July 5, 1973, Ser. No. 376,799
Int. Cl. F16l *17/00, 19/00, 21/02*
U.S. Cl. 285—337 **6 Claims**
Group Art Unit 353

References Cited

UNITED STATES PATENTS

755,994	3/1904	Broome	285/367 X
2,201,372	5/1940	Miller	285/337 X
2,217,664	10/1940	Berger	285/DIG 19



1. A tubing assembly comprising: a first tube section having a central longitudinal axis and including an end portion flared radially and axially outwardly relative to said axis and thus forming an annular flange; a second tube section having an end portion telescopically received in said first tube section; said annular flange cooperating with said second tube section to define an annular, axially opening recess; a metal sealing ring being partially received in said recess and tightly embracing said second tube section; said sealing ring being split so as to define opposed overlapped ends engaged at an interface extending substantially tangential to an inner surface location of the ring; a clamping ring having an annular inwardly opening groove receiving said flange and said sealing ring; and said groove being so configured that surfaces thereof act to wedge said sealing ring into contact with said flange and second tube section.

B 386,403
INSTALLATION FOR DETACHABLE FASTENING OR REAR SEAT CUSHIONS IN PASSENGER MOTOR VEHICLES

Bernd Geier, Grafenau-Datzingen, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Aug. 7, 1973, Ser. No. 386,403
Claims priority, application Germany, Aug. 8, 1972, 2238950
Int. Cl. B60n *1/02*; **A47c** *1/034*
U.S. Cl. 297—440 **10 Claims**
Group Art Unit 351

References Cited

UNITED STATES PATENTS

1,232,931	7/1917	Kilburn	297/440
2,249,132	7/1941	Haslam	292/87
2,358,607	9/1944	Tinnerman	292/87 X
2,755,846	7/1956	Shepherdson	297/440 UX

FOREIGN PATENTS OR APPLICATIONS

210,144	11/1955	Australia	296/65 R

1. An installation for detachable fastening of a rear seat cushion means, characterized in that a rear seat mounting means is provided, aperture means are provided in the rear seat mounting means, the rear seat cushion means includes a sub-frame which is provided in proximity to its forward edge with recess means, a retaining means is fixed at the rear seat

mounting means and includes a head portion engaging in the recess means during the lowering of the rear seat cushion means and a base portion inserted into said aperture means provided in the rear seat mounting means, the retaining means adjusting the rear seat cushion means into a position correct

as regards its location on the rear seat mounting means when the rear seat is lowered, and a spring means is provided having one bent portion on said retaining means for automatically latching the rear seat cushion means when lowered on the retaining means.

B 425,345

METHOD OF MINING WITH A PROGRAMMED PROFILE GUIDE FOR A MINING MACHINE

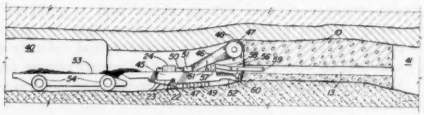
William N. Poundstone, 268 Trotwood Drive, Pittsburgh, Pa. 15241

Filed Dec. 17, 1973, Ser. No. 425,345
Int. Cl. E21c *41/00*
U.S. Cl. 299—1 **6 Claims**
Group Art Unit 354

References Cited

UNITED STATES PATENTS

3,232,688	2/1966	Moon	299/1
3,485,531	12/1969	Risse et al.	299/1



1. A method for mining a mineral deposited underground in a vein having an underburden and an overburden comprising:
a. boring a pilot hole into said vein between said underburden and said overburden;
b. measuring a first mineral thickness between said pilot hole and said overburden at periodic distances along said pilot hole;
c. measuring a second mineral thickness between said pilot hole and said underburden at periodic distances along said pilot hole;
d. storing said first and second measured mineral thickness each with respect to its respective distance along the axis of said borehole from a common point of origin;
e. controlling a mining machine in accordance with said stored information whereby the total mineral removed and the direction of the progress of the mining machine is controlled by said pilot hole and said memory.

B 401,992

PROTECTIVE HUB CAP FOR BICYCLES

Calvin L. Kain, 1325 Rockdale Rd., Bartlesville, Okla. 77003

Filed Oct. 1, 1973, Ser. No. 401,992
Int. Cl. B60b *7/02*
U.S. Cl. 301—108 SC **5 Claims**
Group Art Unit 313

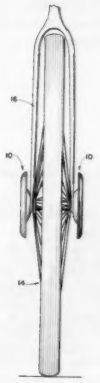
References Cited

UNITED STATES PATENTS

2,789,834	4/1957	Chism	280/489
3,356,421	12/1967	Trevarrow, Jr.	301/37 S

FOREIGN PATENTS OR APPLICATIONS

17,888	1906	Great Britain	403/259



1. A hub cap for bicycle wheel axles comprising a circular hub member having a substantially S-shaped radial cross sectional configuration, said hub member being provided with a centrally disposed aperture therein, an axle attachment washer disposed within said aperture and slidably disposed on the wheel axle, and means for removably securing the washer to the hub member, and wherein the outer portion of the hub member extends outwardly away from the wheel to a point beyond the end of the wheel axle and wherein the outer edge of said hub member curves back towards the wheel thereby forming an annular protective surface around the end of the wheel axle.

5. A hub cap for bicycle wheel axles comprising a circular hub member having a substantially S-shaped radial cross sectional configuration, said hub member being provided with a centrally disposed aperture therein, an axle attachment washer disposed within said aperture and slidably disposed on the wheel axle, and means for removably securing the washer to the hub member, and wherein the outer portion of the hub member extends outwardly away from the wheel to a point beyond the end of the wheel axle and wherein the outer edge of said hub member curves back towards the wheel thereby forming an annular protective surface around the end of the wheel axle, and wherein the washer is cylindrical in shape and is provided with an outwardly extending flange therearound and wherein the means for removably securing the washer to the hub member comprises an annular groove disposed within the hub member aperture, a flared recess provided in the outer end of the aperture between the outer face of the hub member and the groove, the diameter of the cylindrical washer is substantially equal to the diameter of the aperture and the diameter of the flange is substantially equal to the

diameter of the groove whereby the cylindrical washer is inserted into the aperture and the flange is passed through the flared recess and snapped into the groove within the aperture.

B 400,310
PRESSURE DIFFERENTIAL TRAILER BRAKING SYSTEM

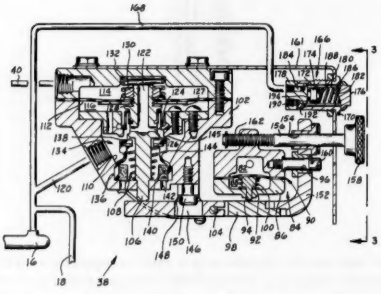
John T. Kasselmann; James J. Colpaert, and Richard T. Burnett, all of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

Filed Sept. 24, 1973, Ser. No. 400,310
Int. Cl. B60t *13/58*
U.S. Cl. 303—7 **14 Claims**
Group Art Unit 315

References Cited

UNITED STATES PATENTS

2,336,342	12/1943	Brewer, Jr.	303/7
3,135,358	6/1964	Greentree	188/3 R
3,507,542	4/1970	Cannella	303/7
3,771,838	11/1973	Rossigno et al.	303/7
3,788,709	1/1974	Schwerin	188/3 R



1. In a tow vehicle-trailer braking system having a first brake applying servomotor operatively connected to the trailer brakes and a second brake applying servomotor operatively connected to the tow vehicle brakes, means responsive to the operator input force applied to the vehicle brake pedal for synchronously actuating said first brake applying servomotor upon actuation of said second brake applying servomotor by the force applied to said brake pedal, said means comprising:

sensing means having a first cell means having a first closed chamber therein, said first closed chamber being filled with a fluid, said first closed chamber having a first opening therein;

first piston means located in said closed chamber through which said input force is applied to the brake pedal, said piston means moving in response to the input force to proportionally compress said fluid causing a quantity thereof to flow through said first opening and establish an actuation signal indicative of said input force;

means responsive to said actuation signal for generating a control signal; and

motor means responsive to said control signal for supplying said first servomotor with an actuation input force to thereby provide optimum braking effectiveness between the tow vehicle trailer and any surface.

B 416,834
SKID CONTROL SYSTEM

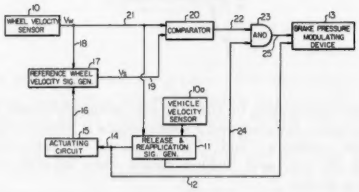
Haruhiko Iizuka, 1427-417 Nobi, and Yasuhisa Takeuchi, 6-20-224 Kugah-cho, both of Yokosuka, Japan

Filed Nov. 19, 1973, Ser. No. 416,834
Claims priority, application Japan, Nov. 20, 1972, 47-11567
Int. Cl. B06a *8/08*
U.S. Cl. 303—21 BE **6 Claims**
Group Art Unit 315

References Cited

UNITED STATES PATENTS

3,758,166	9/1973	Kuwana et al.	303/21 P
3,767,270	10/1973	Urban	303/21 BE
3,802,749	4/1974	Carp et al.	303/21 BE
3,807,811	4/1974	Nakamura et al.	303/21 BE



1. A skid control system for a wheeled vehicle having a plurality of wheels at least one of which is unbraked and at least one of which is braked, said skid control system comprising:

sensing means operatively connected to said unbraked wheel to sense actual vehicle velocity;

sensing means operatively connected to said braked wheel to sense actual velocity of said braked wheel;

brake pressure release voltage signal and reapplication voltage signal generating means responsive to sensed actual vehicle velocity and to sensed actual velocity of said braked wheel to generate brake pressure release and reapplication voltage signals in dependence on said velocities;

an actuating circuit to produce actuating voltage signals in response to release voltage signals;

reference wheel velocity voltage signal generating means to produce a reference wheel velocity voltage signal in response to an actuating voltage signal and a voltage signal representing said actual velocity of said braked wheel;

a first comparator to produce a gate voltage signal when the sensed voltage of said actual wheel velocity exceeds that of said reference wheel velocity voltage signal;

an AND gate to pass therethrough a brake pressure reapplication voltage signal when triggered by said gate voltage signal; and

modulating means to modulate the brake pressure in dependence on said release voltage signal and said reapplication voltage signal passed through said AND gate.

B 345,567

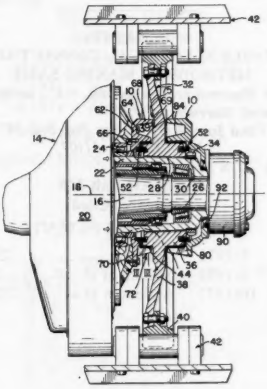
SEAL PROTECTION GUARD

Robert S. Orr, Pekin, and Carl E. Fidler, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 28, 1973, Ser. No. 345,567
Int. Cl. B62d *55/00*
U.S. Cl. 305—11 9 Claims
Group Art Unit 316

References Cited
UNITED STATES PATENTS

2,702,603	2/1955	Risk	180/9.62
2,978,051	4/1961	Risk	180/9.62



1. A seal protection guard, for an annular seal assembly disposed between a pair of relatively rotatable members to minimize the entry of extraneous material into the seal assembly, comprising;

barrier means disposed in closely radially spaced relation to such a seal assembly and having a plurality of circumferentially spaced shielded openings formed therein to minimize tightly constrained packing of such material outwardly adjacent to the seal assembly by permitting the material to be squeezed substantially directly radially outwardly through the circumferentially spaced openings upon the imposition of an externally applied force tending to press such material into the seal assembly.

B 373,428

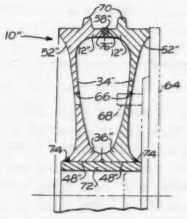
TRACK IDLER WHEEL

Thomas Clasper, Belmont; Wilfred H. Hutton, Ryton-on-Tyne, both of England; Orville E. Kessinger, Jr., Mackinaw; Victor Randour, Aurora, and Fred E. Simpson, Oswego, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 191,597, Oct. 22, 1971, Pat. No. 3,771,843. This application June 25, 1973, Ser. No. 373,428
Int. Cl. B60b *3/08*
U.S. Cl. 305—21 5 Claims
Group Art Unit 315

References Cited
UNITED STATES PATENTS

900,700	10/1908	Bole	74/230.3
1,656,899	1/1928	Best	305/32
2,284,821	6/1942	Heaslet	305/32 X
2,644,575	7/1953	Mercier	301/63 DD X
3,490,285	1/1970	Schaeffler et al.	74/230.5



1. An idler wheel comprising a pair of generally symmetrical circular wheel discs of integral, one piece construction, each wheel disc having an enlarged axially directed circular outer rim and an axially directed circular inner boss, said rim and boss being joined by a generally radially directed wall, said wheel discs being in side-by-side abutting relationship wherein the respective rims and bosses of each wheel disc are in contacting relation over a circular line of contact forming a juncture between the wheel discs wherein each of said wheel discs includes a generally centrally located bore therethrough, a tube dimensioned so as to be fitted within the bores and extending at least the length of both bores, and including means joining said wheel discs together over said circular line of contact of said rim and boss comprising circumscribing welds at the juncture between each boss and a respective end of said tube entirely externally of said bores, and wherein each rim comprises a load bearing shoulder portion directed axially away from the other wheel disc of the pair and an outwardly extending radial central flange portion of greater diameter than the shoulder portion, said central flange portion defining a generally radially directed side surface portion and a generally axially directed portion, said side surface portions adapted for maintaining track alignment.

B 351,672

METHOD OF MAKING TUBELESS GAS PANEL

Martin Beckerman, Woodstock; John A. Murphy, Kingston; John V. Orlandi, Pine Plains, and George W. Smith, Woodstock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,672
Int. Cl. H01j *9/38*
U.S. Cl. 316—20 **4 Claims**
Group Art Unit 325

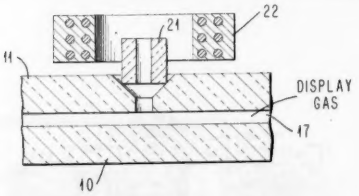
References Cited

UNITED STATES PATENTS

2,262,176	11/1941	Geiger et al.	53/8 X
2,894,294	7/1959	Prescott	52/304
2,988,852	6/1961	Henry	65/34
3,778,127	12/1973	Langston, Jr. et al.	316/20

FOREIGN PATENTS OR APPLICATIONS

279,227	10/1927	Great Britain	53/8
1,080,192	12/1954	France	65/34 X
739,687	8/1966	Canada	52/304



1. In the method of making a gas display panel having a front panel and a back panel joined in a spaced sealed arrangement forming an inner chamber containing display gas, wherein the method comprises baking out a partially completed panel assembly and backfilling such assembly with display gas, said backfilling being done by creating an atmosphere of display gas around said panel assembly, the improvment comprising the steps of:

providing said back panel with a passageway communicating between said inner chamber and the exterior of said back panel;

detachably supporting a preform on said back panel in said passageway, said preform being shaped to allow gas to flow through said passageway;

and, after said backfilling step has been completed and while said panel assembly is in said atmosphere of display gas, melting said preform and allowing it to flow downwardly by gravity so as to fill said passageway, and solidifying said melted preform to seal said display gas in said inner chamber.

B 404,290

DAUGHTER BOARD CONTACT

Lindsay Carlton Friend, Camp Hill, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

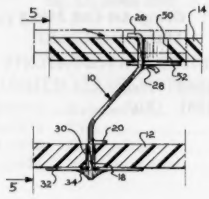
Filed Oct. 9, 1973, Ser. No. 404,290
Int. Cl. H01r *13/54;* **H05k** *1/04*
U.S. Cl. 339—17 M **4 Claims**
Group Art Unit 355

References Cited

UNITED STATES PATENTS

3,066,367	12/1962	Garman	339/17 M X
3,479,634	11/1969	Pritulsky	339/275 B X
3,701,071	10/1972	Landman	339/176 MP X
3,764,955	10/1973	Ward	339/65
3,790,916	2/1974	Keitel	339/17 L X

1. A daughter board contact system comprising a mother board, a number of terminals secured to the mother board in spaced relation and extending from one side thereof with each terminal including a link-arm and a daughter-board engaging hook at the free end of the arm, a number of spring contacts extending outwardly of said side of the mother board, a daughter board having a number of hook-receiving openings thereon and contact pads on one side thereof for forming



electrical connections with said spring contacts, the hooks engaging said openings so that the arms space the mother and daughter board relative to one another and said spring contacts being biased against said pads to form electrical connections between the mother and daughter boards, and means holding the mother and daughter boards together against the spring force of the spring contacts.

B 368,387

FLAT CABLE ELECTRICAL CONNECTIONS AND METHODS OF MAKING SAME

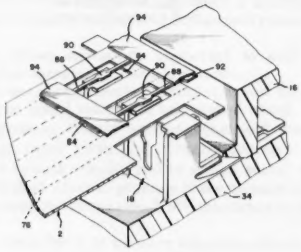
John Robert Shoemaker, Walkerton, N.C., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 8, 1973, Ser. No. 368,387
Int. Cl. H01r *31/02*
U.S. Cl. 339—278 M **2 Claims**
Group Art Unit 355

References Cited

UNITED STATES PATENTS

3,596,486	8/1971	Dolder	206/56 AB X
3,758,703	9/1973	Golden et al.	174/84 C
3,767,841	10/1973	Anderson et al.	174/84 C



1. A continuous strip of stuffer members, each of said stuffer members being adapted to be inserted into the conductor-receiving slot of a contact terminal member for the purpose of retaining a conductor in the slot, said strip comprising: two spaced-apart parallel co-planar carrier strips of polymeric insulating material,

said stuffer members each comprising a stuffer pin which is adapted to be moved laterally of its axis against a conductor and into said slot, each of said pins comprising a flat sheet metal member having parallel side edges, an enlarged center section, and enlarged ends,

said stuffer members extending between said strips of polymeric insulating material ladder-rung fashion, said stuffer members being spaced apart along the length of said carrier strips and having said enlarged ends adhered to said strips whereby,

upon positioning each of a plurality of conductors in alignment with the slots of each of a plurality of contact terminals, and upon positioning a section of said stuffer strip proximate to said conductors with one stuffer pin parallel to each of said conductors, and upon subsequently moving said section of stuffer strip towards said conductors and then moving said stuffer strip and said conductors into said slots, said conductors will be engaged by the edges of said slots and thereby establish electrical contact with said terminals, and said stuffer pins will retain said conductors in said slots.

B 398,551

HOLOGRAPHIC MEMORY UTILIZING A CHANGEABLE PHASE OBJECT AND COHERENT SUBTRACTION

Akira Fukuhara, Tachikawa, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 206,391, Dec. 9, 1971, Pat. No. 3,781,084. This application Sept. 18, 1973, Ser. No. 398,551

Claims priority, application Japan, Dec. 9, 1970, 45-108530; Dec. 25, 1970, 45-130687

Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 **8 Claims**

Group Art Unit 257

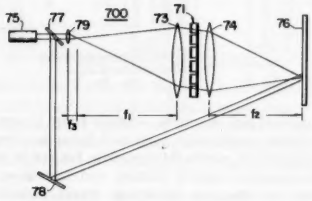
References Cited

UNITED STATES PATENTS

3,559,185	1/1971	Burns et al.	350/150
3,586,415	6/1971	Kumada et al.	350/150

OTHER PUBLICATIONS

Collins, Applied Optics, Vol. 7, No. 1, Jan. 1968, pp. 203–205.



3. A hologram preparing apparatus comprising:

an interferable-light source;

a beam splitter which is arranged in an optical path of an interferable light beam emitted from said interferable-light source;

a pattern generating device including a plurality of reversible phase-modulating elements each comprising

an irregular ferroelectric crystal plate in which each set of mutually opposing end planes are normal to one of *a*-, *b*- and *c*-axis, and a thickness between said end planes is prescribed with respect to a difference *n* in the refractive index between light beams having wavelength λ and having their polarization planes respectively parallel to said *a*- and *b*-axis within the crystal and to a positive integer P by

$$\lambda/2 \cdot \alpha n (P + \tfrac{1}{2}), \text{ and}$$

means for applying a voltage, sufficient to invert the spontaneous polarization of said irregular ferroelectric crystal plate by 180°, to said irregular ferroelectric crystal plate and in parallel to said *c*-axis,

polarizing means which is arranged in front of and in opposition to one end plane of one set of said mutually opposing end planes of said irregular ferroelectric crystal plate of said reversible phase-modulating element, a polarization of said polarizing means being arranged in parallel to one of said *a*- and *b*-axis of said end planes of said irregular ferroelectric crystal plate, the respective elements, being arranged on a plane normal to incident light, one of said *a*- and *b*-axis on one set of said mutually opposing end planes of said each crystal plate being arranged in parallel to a predetermined linear polarization plane, which is arranged in an optical path of one of the light beams split by said beam splitter, and which has the split light beam as the incident light beam;

a Fourier transform lens which is arranged in said optical path of said light beam split by said beam splitter, and immediately adjacent said pattern generating device;

a hologram recording medium which is arranged at a rear focalposition of said Fourier transform lens;

polarizing means which is arranged in the other beam path split by said beam splitter; and

optical means which directs the linearly polarized beam, having passed through said polarizing means, to said hologram medium at a predetermined angle,

whereby a hologram of a pattern image of said pattern generating device is prepared.

B 362,589

BINOCULAR BODY FOR MICROSCOPE PERMITTING VARIATION OF INTERPUPILARY DISTANCE WITHOUT COMPENSATING LENSES

Olin W. Boughton, Williamsville, N.Y., assignor to American Optical Corporation, Southbridge, Mass.

Filed May 21, 1973, Ser. No. 362,589

Int. Cl. G02b *21/20, 27/36*

U.S. Cl. 350—75 **5 Claims**

Group Art Unit 257

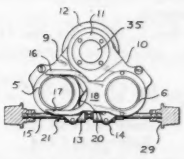
References Cited

UNITED STATES PATENTS

983,569	2/1911	Von Rohr	350/35 X
1,807,613	6/1931	Bauersfeld et al.	350/35 X
1,965,755	7/1934	Warmisham	350/75 X
3,434,772	3/1969	Fogle	350/35

FOREIGN PATENTS OR APPLICATIONS

941,874	4/1956	Germany	350/35
410,993	4/1910	France	350/75



1. In a microscope binocular assembly having a pair of members pivotable about a common axis and each carrying an eyepiece holder to provide accommodation for interpupilary distance, one eyepiece holder being mounted to rotate about its axis, the improvement comprising a rigid link fixed to said one eyepiece holder and slidably engaging the other eyepiece holder so that said one eyepiece holder will rotate during movement to accommodate interpupilary distance and maintain orientation of a reticle in an eyepiece held therein.

B 408,380

OPTICAL FIBER TRANSMISSION MEDIUM

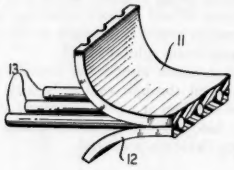
Calvin Max Miller, Lilburn, Ga., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1973, Ser. No. 408,380
Int. Cl. G02b *5/16*
U.S. Cl. 350—96 B **3 Claims**
Group Art Unit 256

References Cited

UNITED STATES PATENTS

3,498,864 3/1970 Ogle ..... 350/396 B



1. An optical fiber transmission line comprising first and second optical fiber ribbons each comprising upper and lower plastic laminate elements mutually adhered but separable by peeling, plural spaced parallel optical fibers enveloped between and embedded into said elements of each said ribbon, the embedding region defining a substantially semicircular groove which retains that shape on removal of the embedded fiber and means for connection of said first and second optical fiber ribbons comprising: one end of said first ribbon with the upper and lower laminate elements dressed back so that the optical fibers extend therebeyond; and one end of said second ribbon with the enveloped optical fibers dressed back so that said first and second laminate elements extend therebeyond; the extended optical fibers of said first ribbon reposing in the vacated semicircular grooves of the second optical fiber ribbon.

B 421,797

WIDE-BAND MULTILAYER INTERFERENCE FILTER

Alfred Thelen, Furstentum, Liechtenstein, assignor to Balzers Patent-und Beteiligungs-Aktiengesellschaft, Balzers, Furstentum, Liechtenstein

Filed Dec. 5, 1973, Ser. No. 421,797
Claims priority, application Switzerland, Dec. 8, 1972, 17946/72
Int. Cl. G02b *5/28*
U.S. Cl. 350—164 **8 Claims**
Group Art Unit 258

References Cited

UNITED STATES PATENTS

3,247,392 4/1966 Thelen ..... 350/164 X
3,423,147 1/1969 Thelen 350/166

FOREIGN PATENTS OR APPLICATIONS

1,028,899 3/1953 France 350/166

1. A wide-band multilayer interference filter in which the stopbands of higher order are partly suppressed, comprising a filter having a periodic arrangement of layers of the structure ABCDDCBA, where A,B,C,D indicate individual layers having each an optical thickness of one-fourth of the predetermined constructional wavelength and the mutually different refraction indices of said layers fulfill the following conditions:

$$y^2 - 2y \cdot x^2 - x + 1/x + 1 = 0$$

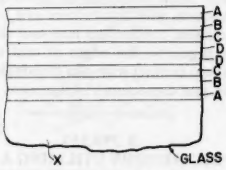
where

$$x = n_A/n_B$$

$$y = n_B/n_C$$

and

$$n_A n_D = n_B n_C$$



B 315,828

COMPACT VARIFOCAL LENS ASSEMBLY

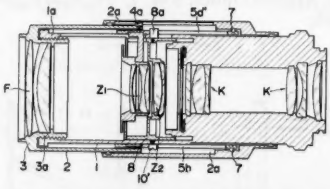
Kyozo Uesugi, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-fu, Japan

Filed Dec. 18, 1972, Ser. No. 315,828
Claims priority, application Japan, Dec. 31, 1971, 47-2419
Int. Cl. G02b *7/10*
U.S. Cl. 350—187 **9 Claims**
Group Art Unit 257

References Cited

UNITED STATES PATENTS

3,465,662 9/1969 Kashiwase ..... 350/187 X
3,765,748 10/1973 Mito 350/187



1. A varifocal lens assembly, wherein zoom is controlled by one movement, preferably axial and focus is controlled by another movement, preferably rotation, for use in association with photographic, motion picture and television cameras, comprising: an objective mounting; means including a first mounting rotatably carried by said objective mounting for rotary motion, said means thereby moving in the axial direction in relation to said objective mounting for focusing adjustment; means including a second mounting operatively positioned and axially movable in relation to said objective mounting for adjustment of the focal length; means including a third objective mounting axially operatively positioned to and reciprocable in relation to said second mentioned means for permitting the picture image appearing in the field of view of an observer or photographer to remain in focus at all times during the axial movement of said second mentioned means; an actuating member mounted on said objective mounting and accessible to the photographer or operator of the varifocal lens assembly for independent or simultaneous rotary and axial movement thereof; first guide means connected between said actuating member and said first mounting for permitting said first mentioned means to undergo rotary and axial sliding motion in accordance with the rotary motion of said actuating member; linkage means connected between said actuating member and said second mounting for transmitting only the axial sliding motion of said actuating member to said second mounting; and second guide means connected between said second mounting and said third mounting for transmitting the

axial sliding motion of said second mounting thereby to permit said third mentioned means to undergo said reciprocal movement in relation to said second mentioned means.

B 425,035
MICROSCOPE CONDENSER

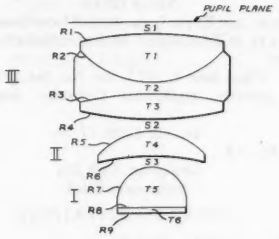
Alois F. Dehlink, Vosendorf, Austria, assignor to C. Reichert Optische Werke AG, Bienna, Austria

Filed Dec. 14, 1973, Ser. No. 425,035
Int. Cl. G02b *21/08*
U.S. Cl. 350—229 **1 Claim**
Group Art Unit 257

References Cited

UNITED STATES PATENTS

3,790,254	2/1974	Rybicki et al.	350/229



1. A microscope condenser having a numerical aperture of 1.30 and composed of the following components:

a first component I comprised of a doublet composed of a plane parallel plate cemented to a hemispherical lens;

a second component II comprised of a meniscus positive lens; and

a third component III, composed of a convex positive triplet in which the parameters of lens radii (R), thicknesses (T), and spacings (S) are expressed in millimeters and a negative sign indicates lens radii on centers of curvature on the object side of the lens

Radius R	Thickness T	Space S	Refractive Index ND	Abbe Number ν
R1 = 26.752				
	T1 = 8.10		ND1 = 1.64049	ν1 = 60.1
R2 = −21.042				
	T2 = 1.50		ND2 = 1.79504	ν2 = 28.4
R3 = 52.427				
	T3 = 2.70		ND3 = 1.69680	ν3 = 55.4
R4 = −108.3				
		S2 = 0.11		
R5 = 14.898				
	T4 = 3.25		ND4 = 1.69680	ν4 = 55.4
R6 = 23.216				
		S3 = 0.11		
R7 = 7.976				
	T5 = 9.30		ND5 = 1.69680	ν5 = 55.4
R8 = PLANO				
	T6 = 1.00		ND6 = 1.63636	ν6 = 35.3
R9 = PLANO				

B 405,136
SIGNAL SENSING FOR FILM PROJECTORS

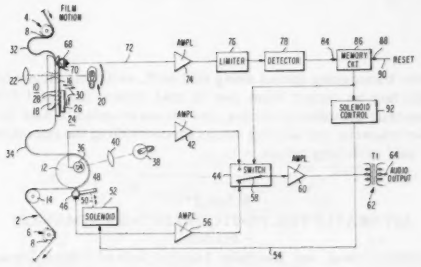
Arnel Edmund Jackson, Audubon, and George Anthony Singer, Haddonfield, both of N.J., assignors to RCA Corporation

Filed Oct. 10, 1973, Ser. No. 405,136
Claims priority, application Great Britain, Mar. 20, 1973, 13266/73
Int. Cl. G03b *31/02*
U.S. Cl. 352—10 **9 Claims**
Group Art Unit 211

References Cited

UNITED STATES PATENTS

2,756,277	7/1956	Good et al.	352/10 X
3,150,810	9/1964	Heaton	352/10 X
3,404,937	10/1968	Peirez et al.	352/10 X



1. The combination with a motion picture film projector including means for advancing said film along a predetermined path which has a projection station including means for rapidly advancing said film in intermittent manner, apparatus for transducing a magnetic or an optical information track on said film, comprising: optical transducing means and first magnetic transducing means in said film path, further magnetic transducing means in preceding relation to said first magnetic transducing means along said path, said further magnetic transducing means being disposed for cooperation with a portion of said film that is being advanced in intermittent manner, switching means for selecting an output from one of said optical and said first magnetic transducing means, and means coupled to said further magnetic transducing means for controlling the operation of said switching means.

B 405,137
AUTOMATIC SIGNAL PLAYBACK FOR FILM PROJECTORS

William Francis Fisher, Philadelphia, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 10, 1973, Ser. No. 405,137
Claims priority, application Great Britain, Mar. 20, 1973, 13266/73
Int. Cl. G03b *31/02*
U.S. Cl. 352—1 D **4 Claims**
Group Art Unit 211

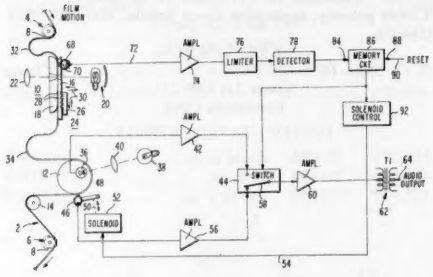
References Cited

UNITED STATES PATENTS

2,756,277	7/1956	Good et al.	352/10 X
3,150,810	9/1964	Heaton	352/10 X
3,404,932	10/1968	Peirez et al.	352/10 X

1. The combination with a motion picture film projector including means for advancing said film along a predetermined path which includes a projection station, apparatus for

transducing a magnetic or an optical information track on said film, comprising: optical transducing means and first magnetic transducing means in said film path, further magnetic transducing means disposed in preceding relation to said first magnetic transducing means along said path, switching means for selecting an output from one of said optical and said first magnetic transducing means, and means coupled to said further magnetic transducing means for controlling the operation of said switching means.



B 349,177

APPARATUS FOR PHOTOGRAPHING ANIMATION FILMS

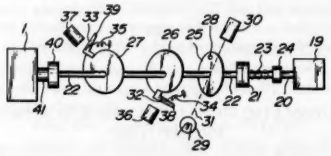
Yoshihiro Iwai, and Kunihiko Tanaka, both of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Apr. 9, 1973, Ser. No. 349,177
Claims priority, application Japan, Apr. 20, 1972, 47-39096
Int. Cl. G03b 21/32
U.S. Cl. 352—87 **13 Claims**
Group Art Unit 211

References Cited

UNITED STATES PATENTS

3,183,770	5/1965	Nymân, Jr. et al.	352/87
3,190,955	6/1965	Maurer	352/87
3,415,600	12/1968	Yarbrough	352/87
3,690,752	9/1972	Derossi	352/169



1. An apparatus for photographing animation films comprising:

a cinecamera having an optical system and a main shaft upon every rotation of which through a predetermined angle, frames of a film are photographed and fed one by one,

torque producing means having an output shaft selectively rotatable in a normal or a reverse direction at a constant speed corresponding to the speed at which the frames are fed,

a rotatable shaft having first and second ends,

friction disc clutch means coupling the first end of said rotatable shaft to said output shaft,

rotational speed detecting means operatively connected to said rotatable shaft for detecting a revolution number of said rotatable shaft and for producing an output proportional to the number of frames fed per unit of time,

restraint means coupled to the rotatable shaft for selectively starting and stopping the rotation of the rotatable shaft, a coupling for connecting the second end of said rotatable shaft to said cinecamera,

a coincidence circuit connected to said detecting means for comparing the output of said detecting means with a preselected value to provide a coincidence output,

means for controlling said restraint means in response to the output of said coincidence circuit to start rotation of said rotatable shaft and to stop rotation after said rotatable shaft has rotated through said perdetermined angle.

a television camera,

a luminous flux divider interposed in the optical system of said cinecamera for directing a portion of the light from said optical system to said television camera,

said television camera adapted to receive an incident luminous flux which is divided at said luminous flux divider interposed in the optical system of said cinecamera,

and a mointor for monitoring the output from said television camera.

B 366,287

METHOD OF AND APPARATUS FOR PRODUCING ENLARGED REPRODUCTIONS OF VESICULAR IMAGE NEGATIVES

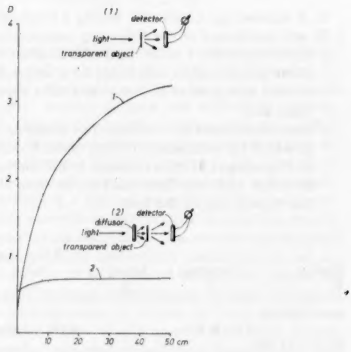
Rudolf Meyer, and Erwin Ranz, both of Leverkusen, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed June 4, 1973, Ser. No. 366,287
Claims priority, application Germany, June 8, 1972, 2227854
Int. Cl. G03b 27/76
U.S. Cl. 355—18 **2 Claims**
Group Art Unit 211

References Cited

UNITED STATES PATENTS

3,374,706	3/1968	Weisglass	355/71 X
3,716,298	2/1973	Reardon	355/71



1. An enlarger for producing enlarged reproductions of a vesicular image negative comprising a light source capable of issuing a light beam, a condenser receiving the light beam, a vesicular image negative receiving and scattering the condensed light and an enlarging lens receiving the scattered light to form an enlarged reproduction of the image wherein the improvement comprises light scattering diffusion means positioned between the condenser and the image negative to determine the density of the reproduced image by the scattering power of the light scattering diffusion means.

2. The method of producing enlarged reproductions of a vesicular image negative, which comprises the steps of passing a light beam from a light source through a condenser, on to a vesicular image negative, passing the light scattered by the image negative through an enlarging lens to produce an enlarged image wherein the improvement comprises positioning between the vesicular image negative and the condenser a diffuser member, producing diffused light, illuminating the vesicular image with said diffused light, and adjusting and controlling the density in the enlarged reproduction by inserting diffusers, having different diffusion characteristics.

B 430,140

CONTROLLED DOCUMENT RECORDING SYSTEM

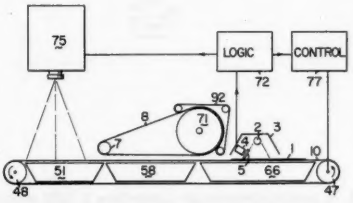
John S. Burton, Los Angeles, and Ronald L. Whitney, San Fernando, both of Calif., assignors to Terminal Data Corporation, Van Nuys, Calif.

Filed Jan. 2, 1974, Ser. No. 430,140
Int. Cl. G03b *27/46*
U.S. Cl. 355—41 **15 Claims**
Group Art Unit 211

References Cited

UNITED STATES PATENTS

3,334,539	8/1967	Kleist et al.	355/64 X
3,493,301	2/1970	Sable et al.	355/64
3,586,437	6/1971	Dietz et al.	355/64 X
3,602,589	8/1971	Dietz	355/64 X
3,689,149	9/1972	Livingood	355/64 X



1. A document photography system comprising;
a. means to transport (10) and photograph (75) documents (1),
b. means to illuminate (2) said documents while being transported,
c. control documents (12) having selected marks (6,7,9,11) at selected positions thereon,
d. means electrically responsive to illumination (4) returned from said marks,
e. control means (77) operatively connected to said means to transport and photograph documents, and
f. logic means (72) connected to said means electrically responsive to illumination, and to said control means,
to control said means to transport and photograph documents according to commands inherent in said selected marks;
said control documents being dimensioned such as to be selectively intermixable with documents to be photographed.

B 425,541

AUTOMATIC ORTHOPHOTO PRINTER AND DISPLAY INCLUDING POSITION ERROR COMPENSATION FOR PHOTO-POSITIONING TRANSPORT

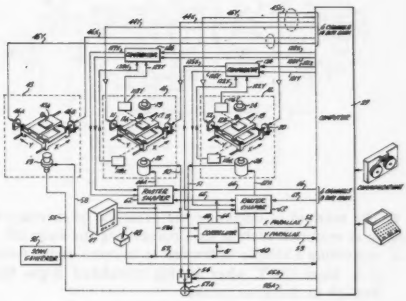
Barry G. Crawley, North Burnaby, British Columbia, Canada, assignor to Gestaldt International Limited

Filed Dec. 17, 1973, Ser. No. 425,541
Int. Cl. G01c *11/18*
U.S. Cl. 356—2 **10 Claims**
Group Art Unit 257

References Cited

UNITED STATES PATENTS

3,564,133	2/1971	Hobrough	356/2
3,659,939	5/1972	Hobrough	356/2
3,674,369	7/1972	Hobrough	356/2



6. An apparatus for providing accurate and precise scanning of an object, comprising:
a. scanning means including means establishing a scan pattern;
b. frame means relatively aligned with said scanning means for holding the object;
c. means providing a first signal establishing a desired position of said object relative to the scan pattern of said scanning means;
d. drive means coupled to said frame means for moving said object in response to said first signal;
e. sensor means providing a second signal proportional to the actual position of said object relative to said scan pattern;
f. comparator means for subtractively combining said first and said second signals to obtain a position error signal; and,
g. means coupled to said comparator and to said scanning means for shifting the scan pattern of said scanning means in proportion to said position error signal.

B 442,280

ZEEMAN EFFECT ABSORPTION SPECTROMETER

Tetsuo Hadeishi, Berkley, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Continuation of Ser. No. 288,801, Sept. 13, 1972, abandoned. This application Feb. 13, 1974, Ser. No. 442,280

Int. Cl. G01n 21/34; G01j 3/30

U.S. Cl. 356—51 10 Claims

Group Art Unit 257

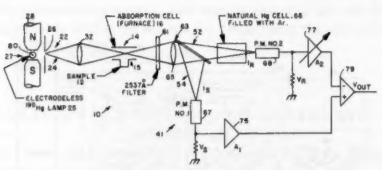
References Cited

UNITED STATES PATENTS

3,449,565	6/1969	Barringer	356/51
3,544,789	12/1970	Wieder	356/87
3,676,004	7/1972	Prugger et al.	356/87

OTHER PUBLICATIONS

"Hyperfine Zeeman . . . Mercury;" Hadeishi et al.; Science; Vol. 174; 22 Oct. 1971; pg. 404–07; 356/87.



1. The method of detecting the presence of mercury in a host food material, such as fish, comprising the steps of:

a. vaporizing a sample of the fish in an open-ended furnace at at least 150°C after having circulated a gas therethrough to decrease smoke;

b. producing specific focused light spectra from a single specific ^{199}Hg isotope in a single separate electrodeless light source means in the presence of a magnetic field of up to 10 kG whose direction is normal to the spectra and whose strength is sufficiently strong so that said spectra comprise ultra violet light having a wavelength of 2,537 A and specific σ^+, σ^- and π circularly and linearly polarized Zeeman components, a first of said components having a intensity that is capable of being attenuated by absorption by said mercury in said vapor, said first of said Zeeman components being on the top of the absorption peak profile of the mercury and the remaining of said Zeeman components being non-absorbed by said mercury in said vapor thereby forming at least one reference signal;

c. transmitting said light spectra through said vapor in said open-ended furnace wherein the aforesaid first component is attenuated and the other components are substantially non-absorbed by said mercury;

d. splitting said spectra emerging from said vapor into first and second beams;

e. producing a first electrical signal output corresponding to the intensity of said first beam;

f. subjecting said second beam to absorption by a filter that removes the aforesaid first component attenuated by the mercury in the vapor;

g. producing a second electrical signal output corresponding to the intensity of the filtered second beam; and

h. measuring the difference between the first and second electrical signal outputs as an indication of the amount of mercury present in said sample of said fish.

B 235,925

SPECTROPHOTOMETER FOR USE AS A SPLIT BEAM AND DUAL WAVELENGTH MEASUREMENTS

Tadashi Honkawa, 1030, Ichige and Kenji Fukuda, 663, Ichige, both of Katsuta, Japan

Filed Mar. 20, 1972, Ser. No. 235,925

Claims priority, application Japan, Mar. 19, 1971, 46-15126

Int. Cl. G01n 21/00; G01j 3/42

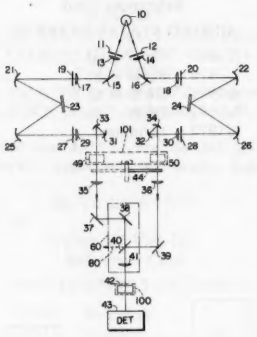
U.S. Cl. 356—73 7 Claims

Group Art Unit 257

References Cited

UNITED STATES PATENTS

2,503,165	4/1950	Meyer	356/93
3,666,362	5/1972	Chance	356/93
3,712,738	1/1973	Yamamoto	356/94



1. A spectrophotometer comprising a light source, optical means for directing the light beams from said light source along first and second paths, a pair of monochromators positioned along said first and second paths, respectively, for receiving the light beams from said optical means, a chopper for alternately interrupting the respective light beams in said first and second paths at the outputs of said monochromators, a first mirror block means separate from said chopper for receiving the interrupted light beams from said chopper and for directing a portion of the respective light beams in said first and second light paths into a common light path, a cuvette housing positioned at the output of said first mirror block means and through which said common light path extends, and detector means for receiving light from the output of said cuvette housing, said first mirror block means directing the remaining portion of respective light beams in said first and second light paths not directed into the common light path away from at least one of said cuvette housing and said detector means, whereby the presence of shielding means for interrupting the light beams is avoided and further including a second mirror block means interchangeable with said first mirror block means for separately deflecting and condensing the respective light beams in said first and second light paths from said chopper so as to direct the separate light beams onto said cuvette housing.

B 320,603

MONOCHROMATOR WITH ROTATABLE LENS

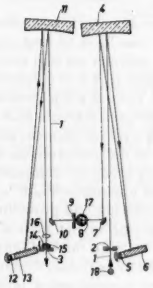
Ernst Winter, Jena, Germany, assignor to Jenoptik Jena G.m.b.H., Jena, District of Gera, Germany

Filed Dec. 20, 1972, Ser. No. 320,603
Int. Cl. G01j 3/12
U.S. Cl. 356—100 3 Claims
Group Art Unit 257

References Cited

UNITED STATES PATENTS

2,339,053 1/1944 Coleman 356/101



1. A monochromator comprising
a light source,
a light entrance slit,
a light exit slit,
an optical system for imaging said light entrance slit on said light exit slit,
an adjustable dispersion means adapted to substantially displace at right angles the image of said light entrance slit in the plane of and relative to said light exit slit as a function of the wave length of the analyzed light,
a lens positioned in the proximity of one of said slits, said lens being rotatable around an axis, being in turn parallel to said light entrance slit for attaining congruency between the image of said light entrance slit and said light exit slit,
said optical system, said adjustable dispersion means and said lens being arranged between said entrance slit and said exit slit and being in optical alignment with each other, and with the entrance slit and the exit slit,
a first mechanical means for displacing said dispersion means and a second mechanical means adapted to rotate said lens.

B 430,944

QUANTIZED INDICATION ARRANGEMENT

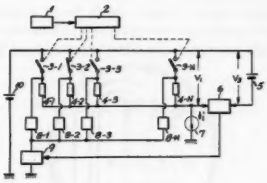
Chiharu Mori, Tokyo, Japan, assignor to Osahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Division of Ser. No. 286,988, Sept. 7, 1972. This application Dec. 26, 1973, Ser. No. 430,944
Claims priority, application Japan, Sept. 11, 1971, 46-70510
Int. Cl. G01j 1/44
U.S. Cl. 356—226 9 Claims
Group Art Unit 257

References Cited

UNITED STATES PATENTS

3,634,763 1/1972 Micale ..... 324/99 D
3,737,240 6/1973 Wagner 356/226



1. A quantized indicating unit comprising:
a photo-sensitive circuit means providing a controllable constant current source and connected in a circuit path for current flow;
a plurality of impedance means;
means for selectively coupling any one of said impedance means in said path for current flow;
means for sequentially scanning through a sequence of states, said coupling means responding to each different one of said states for coupling at least one different impedance means into said current path, thereby causing, for each of said states, a signal on said coupled impedance means corresponding to the amount of said current flow and to the coupled impedance means;
a source of a reference signal;
means for comparing said signal with said reference signal;
an indicating element for each of said impedance means; and
means coupled to said scanning means and comparing means and responsive to a correspondence detected by said comparing means for switching an indicating element into an indicating condition which element corresponds to the impedance means that is coupled into said current path.

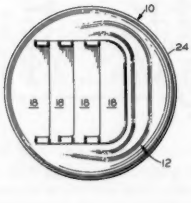
B 358,174
HIGHWAY RETROREFLECTING MARKER

William P. Rowland, Millbrook Ln., Southington, Conn. 06489

Continuation-in-part of Ser. No. 317,263, Dec. 21, 1972, abandoned. This application May 7, 1973, Ser. No. 358,174
Int. Cl. E01f *11/00*
U.S. Cl. 404—15 17 Claims
Group Art Unit 352

References Cited
UNITED STATES PATENTS

1,797,498	3/1931	Finley	404/11
1,902,440	3/1933	Gill	404/16 X
2,224,937	12/1940	Stedman	404/11
2,328,407	8/1943	Becker	404/16
2,627,784	2/1953	Pellar	350/97
2,991,698	7/1961	Leubaz	404/16
3,216,335	11/1965	Stolarczyk	404/11
3,332,327	7/1967	Heenan	350/103 X
3,343,467	9/1967	Bonvallet	404/16
3,377,930	4/1968	Kone	404/11



1. A highway retroreflecting marker comprising; a housing having a base and a resiliently depressible cap projecting upwardly therefrom, at least said cap being formed from a relatively wear-resistant synthetic resin, said cap being substantially sealingly engaged with said base, and retroreflecting means supported in said housing, said cap having a redirecting means which is transparent to enable light rays to pass therethrough and which redirects the light rays striking said redirecting means to an angle of less than 30° to the perpendicular to the plane of said retroreflecting means, said housing being adapted for positioning of said base thereof and said cap thereof relative to a road surface so that light rays striking said redirecting means are redirected within said housing to said retroreflecting means, then are retroreflected from said retroreflecting means to said redirecting means, and thereafter are directed back from said redirecting means in the direction of the source of the light rays.

B 418,490
STRUCTURE FOR PROTECTING AND INSULATING FROZEN SUBSTRATES AND METHOD FOR PRODUCING SUCH STRUCTURES

Albert C. Condo, 3424 Ivy Ln., Newtown Square, Pa. 18940; George R. Knight, College, Alaska; Glenn R. Burt, 910 Jame St., Deer Park, Tex., and Alfred E. Borchert, 102 Deerfield Dr., Cherry Hill, N.J.

Continuation of Ser. No. 205,381, Dec. 6, 1971, abandoned. This application Nov. 23, 1973, Ser. No. 418,490
Int. Cl. E01c *7/36*
U.S. Cl. 404—31 8 Claims
Group Art Unit 352

References Cited
UNITED STATES PATENTS

3,250,186	5/1966	Leonards	404/31
3,459,695	8/1969	Hedge et al.	260/28 S
3,473,951	10/1969	DeRossi et al.	117/72
3,655,597	4/1972	Strassel et al.	260/2.5 AZ
3,657,036	4/1972	Mullenhoff et al.	156/79
3,667,237	6/1972	Dougan	61/36 A

1. An insulating and protective structure for frozen substrates comprising a base layer of long crude oil composition containing synthetic polymer on said substrate, a plurality of successive superimposed layers of polyurethane foam, foamed in place, on said base layer at a thickness sufficient to provide about 3 to 8 layers per inch wherein each of said foam layers has an unfoamed skin layer on its upper surface and each layer is bonded to the skin of the polyurethane layer beneath it, and an upper layer of long crude oil composition containing synthetic polymer on the uppermost foam layer.

6. A method of insulating and protecting frozen substrates which comprises applying to the surface of said substrate a base layer 15 mils to 0.1 inch thick of long crude oil composition containing synthetic polymer, foaming in place on said base layer successive superimposed layers of polyurethane foam at a thickness sufficient to provide three to eight layers per inch in a manner to provide each layer with a non-foamed skin on its upper surface with the next succeeding foam layer being applied before the skin of the preceding layer has completely cured with the result that the succeeding layer coheres to said preceding foam skin surface and applying to the skin layer on the uppermost foam layer a protective layer of long crude oil composition containing synthetic polymer.

B 346,901
PAVING MACHINE SLIP FORM

Carl Aparicio, 1875 Booksin Ave., San Jose, Calif. 95125

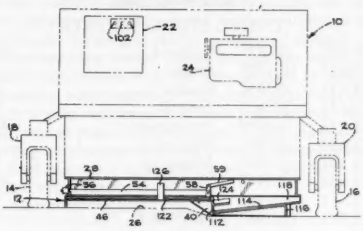
Filed Apr. 2, 1973, Ser. No. 346,901
Int. Cl. E01c *11/28*
U.S. Cl. 404—98 12 Claims
Group Art Unit 352

References Cited
UNITED STATES PATENTS

940,061	11/1909	Ransome	404/98
1,034,074	7/1912	Cannell	404/96
2,587,321	2/1952	Hohnke	404/98
2,864,290	12/1958	Freeman	404/98
3,377,933	4/1968	Dale	404/98
3,779,662	12/1973	Smith	404/98

1. A paving machine comprising:
a. a carriage;
b. means connected to said carriage for moving said carriage along the ground;
c. a slip form secured to an underside of said carriage and including

1. a frame;
2. a primary shaping plate mounted on said frame and having a first portion supported substantially horizontally at a sidewalk level and a second portion contiguous with said first portion and substantially at right angles thereto with a lower edge thereof supported at a street level, such that at least part of said plate has a contour corresponding to the exposed surfaces of a curb;
3. a primary blade extending across one end of said plate and mounted for rotational movement in a substantially



vertical plane, with a lower edge thereof being supported at approximately sidewalk level in a first portion thereof and extending from approximately sidewalk level at one end thereof to approximately street level at the other end thereof in a second portion thereof, and
4. blade moving means connected to said primary blade for rotatably moving said primary blade between its first position and its second position; and

d. control means connected to said blade moving means for controlling the operation of said blade moving means to rotatably move said primary blade between its first and second positions.

B 359,740
RIDE-TYPE SURFACE-WORKING MACHINES

Orville H. Holz, Sr., Palm Harbor, Fla., and Norbert J. Holz, Roselle, Ill., assignors to Orville H. Holz, Jr., Villa Park, Ill., a part interest

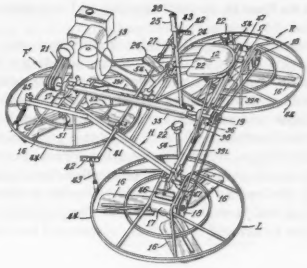
Continuation-in-part of Ser. No. 258,589, June 1, 1972, abandoned. This application May 14, 1973, Ser. No. 359,740
Int. Cl. E01c *19/22*
U.S. Cl. 404—112 **15 Claims**
Group Art Unit 352

References Cited

UNITED STATES PATENTS

2,342,445	2/1944	Allen	404/112
2,689,507	9/1954	McCrery	404/112
2,869,442	1/1959	Mincher	404/112
2,887,934	5/1959	Whiteman	404/112
2,898,826	8/1959	Livermont	404/112
2,983,203	5/1961	Fletcher	404/112
3,091,158	5/1963	Bunger	404/112
3,791,754	2/1974	Zochil	404/112

1. A ride-type surface-working machine comprising three driven rotors rotating about widely spaced generally vertical axes with each rotor engaging the supporting surface with surface-working means distributed about the rotor axis and which follow an annular path along a supporting surface, a frame carried by the rotors and supporting driving means for the rotors and an operator's position, said rotors being mounted on the frame by means permitting relative tilting of each rotor about one or more horizontal axes, and control means operatively related to said frame and rotors and controllable by an operator riding on the frame for applying selectively tilting pressures to the rotors, the tilting pressure applied to a rotor tending to tilt the entire rotor unit about a horizontal axis, for controlling the posture and movement of the machine by variations of downward working pressure



distribution; said control means including means for applying tilting pressures to all three rotors, to one side of each for forward movement of the machine and alternatively to opposite sides of each for rearward movement of the machine.

B 405,305
CONTROL APPARATUS FOR A WATER SUPPLY SYSTEM

Elmer M. Deters, Muscatine, Iowa, assignor to Weil-McLain Company Inc., Dallas, Tex.

Filed Oct. 11, 1973, Ser. No. 405,305
Int. Cl. F04b *49/02, 49/08*
U.S. Cl. 417—26 **7 Claims**
Group Art Unit 343

References Cited

UNITED STATES PATENTS

2,839,077	6/1958	Kristensson	137/491
3,563,671	2/1971	Weber	417/38
3,782,858	1/1974	Deters	417/26

1. A control apparatus for use in a water supply system of the type having a motor operated pump operable to pump water through a delivery line to one or more valved outlets, said control apparatus being adapted to control starting and stopping of the pump motor and to regulate pressure in the delivery line to a substantially constant delivery pressure during normal flow through the delivery line and comprising:
a. a main valve casing having a main valve inlet and a main valve outlet adapted for connection in the water system to have water from the pump flow therethrough to the delivery line, said main valve casing having a main valve seat intermediate said main valve inlet and said main valve outlet, a main valve member for controlling flow through said main valve seat, a main pressure responsive movable wall operatively connected to said main valve member and having one side exposed to pressure at said main valve outlet, means defining a main pressure chamber at the other side of said main pressure responsive movable wall for applying pressure thereto in opposition to the pressure at said one side of the main pressure responsive movable wall, control passage means communicating said main valve inlet with said main pressure chamber for passing a restricted flow of water to the main pressure cham-

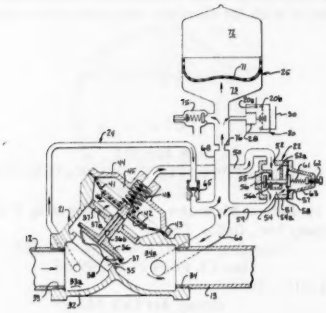
ber to pressurize the main pressure responsive movable wall in a direction to close the main valve member,

b. a pressure operated motor control switch responsive to the pressure at said main valve outlet for energizing the pump motor when the pressure at the main valve outlet reaches a preset lower switch operating pressure and for deenergizing the pump motor when the pressure at the main valve outlet reaches a preset upper switch operating pressure to thereby control starting and stopping of the pump,

c. a pressure regulating pilot valve including a pilot valve casing having a pilot valve inlet communicating with said main pressure chamber and pilot valve outlet communicating with said main valve outlet and a pilot valve seat intermediate said pilot inlet and pilot outlet, a pilot valve member for controlling flow through said pilot valve seat, pilot valve biasing means for applying a preselected substantially constant force to said pilot valve member urging the same toward an open position, a pilot pressure responsive movable wall responsive to the pressure at said main valve outlet and operatively connected to said pilot valve member for moving the pilot valve member against the force of said pilot valve biasing means to a closed position as the pressure at the main valve outlet increases to a preselected delivery pressure intermediate said upper and lower switch operating pressures, said pilot valve controlling flow from said main pressure chamber and being operative to vary the pressure therein and effect movement of the main valve member toward and away from its seat to maintain the pressure at the main valve outlet substantially constant at said preselected delivery pressure over a wide range of flow through the main valve,

d. a pneumatic pressure tank communicating with said main valve outlet; and

e. a bypass communicating said main valve inlet with said main valve outlet and said pneumatic pressure tank for passing a restricted flow thereto when the main valve is closed to refill the pneumatic pressure tank until the pressure increases at the main valve outlet to said upper switch operating pressure and motor control switch and deenergize the pump motor.



B 416,933

RADIAL COMPRESSOR WITH MUFFLED GAS CHAMBERS AND SHORT STABLE PISTON SKIRTS AND METHOD OF ASSEMBLING SAME

Marvin E. Gaines, and Robert L. Swadner, both of Dayton, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 275,553, July 27, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 416,933

Int. Cl. F04b *1/04*; B23p *15/00*

U.S. Cl. 417—53 **17 Claims**

Group Art Unit 343

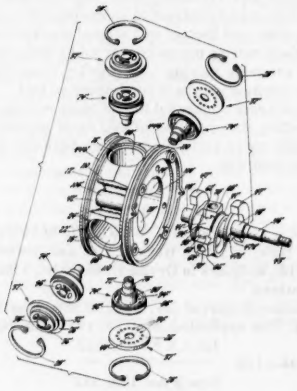
References Cited

UNITED STATES PATENTS

1,383,657	7/1921	Noguera	417/273
1,687,425	10/1928	Briggs	74/50
2,598,975	6/1952	Coulter	29/525
2,710,137	6/1955	Arnovil	92/172
2,818,816	1/1958	Christenson	417/273
3,133,450	5/1964	Riley et al	74/50
3,168,301	2/1965	Allinquant	92/155
3,174,436	3/1965	Wanner	417/273
3,212,411	10/1965	Storms	92/248
3,358,914	12/1967	MacMillan	92/155

FOREIGN PATENTS OR APPLICATIONS

367,790	2/1939	Italy	417/273



1. A radial compressor of the type including a cast cylinder housing having cross bores including cylinder walls therein along axes normal to each other, said housing having one closed end and a removable cylinder head closing its other end; a drive shaft rotatably mounted in said housing and said cylinder head; an eccentric on said drive shaft, a slider block rotatably mounted on said eccentric; a pair of yokes disposed normal to each other and in engagement with normal surfaces of said slider block; pairs of piston assemblies connected to each yoke so that the pistons extend oppositely from each other from said yokes; said piston assemblies being press-fit connected to said yokes providing a stable connection therebetween; said pistons including a relatively short piston skirt; said pistons further including an annular groove in said piston skirts extending a major portion of the width along said skirt; a sealing ring disposed in said groove substantially the full width thereof to provide a relatively wide bearing surface between said piston skirt and the cylinder walls of said cross bores, the relatively wide bearing surface of said sealing ring being sufficiently wide to accomplish a fluid tight seal while providing substantial area of engagement preventing metal-to-metal contact between said piston skirts and said cylinder walls; said cylinder housing being formed to include relatively

large intake and discharge cavities muffling sound energy in gases flowing therethrough during operation of the compressor, said discharge cavities molded integral with said cylinder housing between the cylinder bores; reinforcing web portions molded integral with said cylinder housing and at least partially defining said discharge cavities and providing a rigid cylinder housing structure and areas for fastening the cylinder head to said cylinder housing as well as areas for securing the entire assembly in an operational environment, and valve means to direct fluids to and from the cylinder bores.

16. An improved method of assembling a radial compressor without screws comprising the steps of inserting a unitized drive shaft assembly including yoke sockets into the central intake chamber of a radially bored and counterbored drum-shaped cylinder housing, press-fitting stems of unitized piston assemblies including intake valves through the radial bores into stable connections with the yoke sockets of said drive shaft assembly, snap-fastening unitized discharge valve assemblies into seated relationship in said counterbores radially outboard of said piston assemblies, and pressing a sleeve into surrounding relationship with said cylinder housing outboard of said discharge valve assemblies to form a discharge chamber around said cylinder housing.

B 419,481

ELECTRICALLY CONTROLLED FUEL PUMP

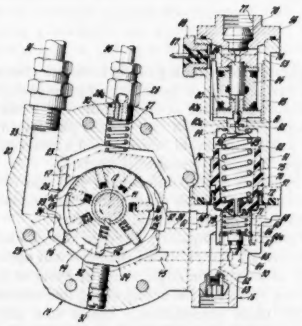
Ralph H. Johnston, and Leroy E. Lakey, both of Anderson, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1973, Ser. No. 419,481
Int. Cl. F04b *49/00*
U.S. Cl. 417—220 **4 Claims**
Group Art Unit 343

References Cited

UNITED STATES PATENTS

2,588,522	3/1952	Harris	417/222
3,067,693	12/1962	Lambeck	417/300
3,165,068	1/1965	Burnham et al.	91/492
3,252,419	5/1966	Tyler	417/222
3,724,972	4/1973	Guetersloh	417/220
3,732,041	5/1973	Beai et al.	417/222



1. In a fuel pump mechanism having a variable displacement pump for delivering fuel, said pump including a spring biased slider with a pump cavity therein slidable in a stator chamber of the pump housing for varying the displacement of the pump, a pressure regulator for controlling delivery of fuel from said pump comprising a housing defining a cavity divided by a diaphragm to provide a first chamber for receiving fuel discharged from said pump and a second chamber in communication with said first chamber by a sized orifice, said housing further defining a fuel delivery outlet extending from said first chamber for discharge of fuel and a regulating pressure outlet extending from said first chamber in communication with said stator chamber on the opposite side of said slider from said spring, said diaphragm being movable away from said regulating pressure outlet in response to an increase in fuel pressure within said first chamber, spring means biasing said diaphragm toward said regulating pressure outlet, a bracket secured to said diaphragm within said first chamber, a valve member disposed in said first chamber and engageable with said regulating pressure outlet for controlling flow therethrough, means biasing said valve member away from said diaphragm toward engagement with said regulating pressure outlet, said valve member including means engageable with said bracket after said diaphragm and said bracket move a selected distance away from said regulating pressure outlet to thereby disengage said valve member from said regulating pressure outlet, a discharge orifice from said second chamber, and a solenoid operated pilot valve positioned to control the flow through said discharge orifice from said second chamber.

B 357,682

METERING PUMP

Alden A. Lofquist, Jr., 10 Rita Way, Orinda, Calif. 94563

Continuation-in-part of Ser. No. 338,103, March 5, 1973. This application May 7, 1973, Ser. No. 357,682
Int. Cl. F04b *19/14*; **F01d** *23/00*; **F03b** *9/00*
U.S. Cl. 417—320 **12 Claims**
Group Art Unit 343

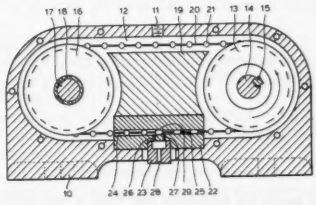
References Cited

UNITED STATES PATENTS

1,382,705	6/1921	Wood	417/489
2,510,657	6/1950	Rapisarda	417/320
3,148,624	9/1964	Baldwin	417/383
3,365,104	1/1968	Bowman	222/365

FOREIGN PATENTS OR APPLICATIONS

2,632	4/1866	Great Britain	417/320



1. Apparatus for metering small volumes of fluids which comprises:

A. Body means having an elongated passageway therein with said passageway having a smaller portion of smaller cross-sectional area, and a larger portion of larger cross-sectional area and a transitionary portion therebetween,

B. An endless member extending longitudinally through said passageway and movable longitudinally therethrough,

C. A plurality of annular portions attached to said endless member for movement therewith through said passageway with said annular portions being engagable with said passageway in fluid sealing relation in both said first and second portions,

D. First fluid flow means communicating with said passageway adjacent to said transitionary portion, and

E. Second fluid flow means communicating with the larger portion of the passageway.

B 416,832

FUEL PUMP

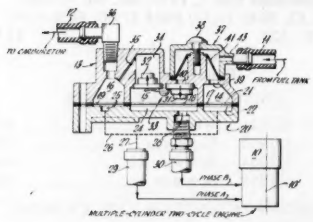
James M. Hundertmark, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Nov. 19, 1973, Ser. No. 416,832
Int. Cl. F04b *43/06*
U.S. Cl. 417—395 7 Claims
Group Art Unit 343

References Cited

UNITED STATES PATENTS

2,713,858	7/1955	Armstrong et al.	417/395 X
3,424,091	1/1969	Turner	417/395
3,556,687	1/1971	O'Connor	417/395



1. A fuel pump for supplying fuel from a fuel source to the carburetor of a two-cycle internal-combustion engine having a plurality of cylinders, comprising first and second and third chambers, pressure-responsive diaphragm means extending across each of said chambers, a fuel-supply chamber having a fuel-source connection and having overlapping connection with said first and second chambers, an inlet check valve at the connection between said fuel-supply chamber and said second chamber, means including an outlet check valve connecting said second and third chambers, said third chamber including a fuel-output connection, first crankcase-connection means on the opposite side of the diaphragm at said first chamber for a first phase of pulsed operation thereof in accordance with a first-phase, second crankcase-connection means on the opposite side of the diaphragm at said second chamber for pulsed operation thereof in accordance with a second phase in phase-displaced relation to said first phase, and third crankcase-connection means on the opposite side of the diaphragm at said third chamber for pulsed operation thereof in phase-displaced relation with said second phase.

B 351,055

APPARATUS FOR PUMPING LIQUID CONCRETE

Heinz Bille, 46 Weissdorniveg, Dormund-Hombruch, Germany

Filed Apr. 13, 1973, Ser. No. 351,055
Claims priority, application Germany, Apr. 18, 1972, 2218697
Int. Cl. F04b *15/02, 35/00*
U.S. Cl. 417—516 2 Claims
Group Art Unit 343

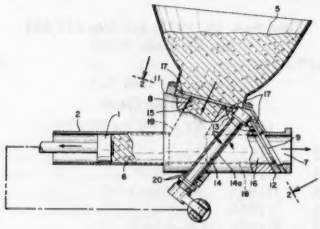
References Cited

UNITED STATES PATENTS

3,068,806	12/1962	Sherrod	417/317
3,146,721	9/1964	Schwing	417/900
3,398,693	8/1968	Schumann	417/900
3,580,696	5/1971	Schwing	417/900
3,588,294	6/1971	Schlecht	417/900
3,726,614	4/1973	Schellenberg	417/900

FOREIGN PATENTS OR APPLICATIONS

762,896	4/1934	France	417/900



1. An apparatus for pumping liquid concrete comprising:
a housing having a pair of spaced-apart passageways exiting at a common discharge at one end thereof, a pair of inlet ducts each merging with one of said passageways at an oblique angle within said housing, and a concrete receiving hopper coupled to said inlet ducts;
a pair of cylinders each connected to said pair of spaced-apart passageways at the other end of said housing;
a piston disposed in each of said cylinders;
a reciprocating shaft angularly disposed through said housing and having a pair of blades, diametrically opposed and disposed at an oblique angle about one end of said shaft so that one blade intermittently closes one inlet duct and the other blade intermittently closes one passageway adjacent to the common discharge, means for axially adjusting said shaft with respect to the inlet ducts and the passageways, said reciprocating shaft co-acting with each of said pistons so that one of the blades opens one of the inlet ducts to permit liquid concrete to enter the housing as its corresponding piston is withdrawn in one of the cylinders while the other blade opens the other passageway adjacent to the common discharge while its corresponding piston is urged towards the housing permitting the liquid concrete to exit from the passageway into the common discharge.

B 424,572

ROTARY ENGINE ANTI-SPIN OIL SEAL

Dale P. Rose, Howell, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 13, 1973, Ser. No. 424,572
Int. Cl. F01c 19/00; F04c 15/00, 27/00
U.S. Cl. 418—142 4 Claims
Group Art Unit 343

References Cited

UNITED STATES PATENTS

3,193,188	7/1965	Bentele	418/142
3,575,541	4/1971	Hamada	418/142
R18,776	3/1933	McMinn et al.	277/136

FOREIGN PATENTS OR APPLICATIONS

860,740	10/1940	France	277/137
1,233,198	1/1967	Germany	418/142

1. A rotary engine having a housing with an inwardly facing peripheral wall and oppositely facing inner side walls cooperatively defining a cavity, a crankshaft rotatably supported in said housing, said crankshaft having an eccentric located in said cavity, a rotor rotatably mounted on said eccentric in said cavity, said rotor having sides facing said side walls and peripheral faces facing said peripheral wall defining a plurality of chambers that are spaced about and move with said rotor while varying in volume as said rotor rotates, a circular oil seal groove in each side of said rotor with its center on the rotor axis, a circular oil seal in each said oil seal groove axially movable to sealingly engage the opposing side wall, said oil seal having a backside and oppositely radially facing sides, said oil seal groove having a bottom and oppositely radially facing walls, a wave spring mounted in said oil seal groove engaging said groove bottom and said oil seal backside for biasing said oil seal to normally move axially in said oil seal groove to sealingly engage the opposite housing side wall, an elastomeric seal groove in one of said radially facing sides of said oil seal; said elastomeric seal groove having a radially facing bottom opposite one of the walls of said oil seal groove and radially extending oppositely facing walls, an elastomeric seal mounted in said elastomeric seal groove in said oil seal and engaging the bottom of said elastomeric seal groove and the oppositely radially facing said one wall of said oil seal groove to provide sealing between said oil seal and said rotor while said oil seal sealingly engages the housing side wall, lock tab means secured in an aperture through the bottom and adjacent one corner of said elastomeric seal groove in said oil seal out of the way of said elastomeric seal and projecting radially past the unsealed other radially facing side of said oil seal, and a lock groove in the unsealed wall of said oil seal groove in said rotor aligned with the normal direction of oil seal movement for receiving said lock tab to prevent said oil seal from spinning in said oil seal groove while permitting said lock tab to move with said oil seal in the normal direction in said oil seal groove so that said oil seal remains free to move axially to maintain sealing engagement with the opposite housing side wall.

B 324,739

COEXTRUSION APPARATUS

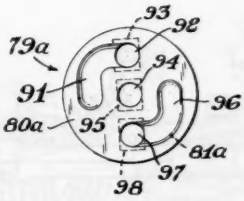
Walter J. Schrenk, 5259 Fairway, Bay City, Mich. 48706

Continuation-in-part of Ser. No. 183,786, Sept. 27, 1971, abandoned. This application Jan. 18, 1973, Ser. No. 324,739
Int. Cl. B29f 3/12
U.S. Cl. 425—131.1 8 Claims
Group Art Unit 322

References Cited

UNITED STATES PATENTS

3,443,278	5/1969	Nauta	425/131
3,477,099	11/1969	Cee et al.	425/131
3,487,505	1/1970	Chisholm et al.	425/131
3,524,795	8/1970	Peterson	264/171 X
3,538,544	11/1970	Ullman	425/131
3,585,685	6/1971	McDermott	425/131
3,601,846	8/1971	Hudnall	425/131



1. A multiple extrusion apparatus, the multiple extrusion apparatus for the preparation of resinous film or sheet comprising

a plurality of sources of extrudable material,

a distribution manifold, the distribution manifold defining

a plurality of manifold inlet passageways each adapted to receive and pass a stream of extrudable material from one of the sources, the manifold inlet passageways each having

an inlet end and

an outlet end, the outlet ends of the passageways terminating on a generally planar face of the manifold, the manifold defining,

a manifold discharge passage having inlet and outlet ends, the discharge passage inlet end terminating in a generally planar face,

a slot die defining an elongate extrusion slot,

a die plenum in connection with the extrusion slot,

a die inlet feed passageway in communication with the plenum, the feed passageway having

an inlet end and

an outlet end, the extrusion slot being in full communication with the inlet end of the die inlet feed passageway, the die feed passageway being in communication with the outlet of the manifold discharge passage,

a replaceable insert disposed between the outlets of the manifold inlet passageways and the inlet of the manifold discharge passageway, the insert having a plurality of channels therein providing selective communication between the outlet ends of the manifold passages and the inlet end of the manifold discharge inlet passage wherein the insert has a first end and a second end, the first end being disposed in mating relationship with the generally planar face of the manif old adjacent the outlet ends of the manifold inlet passages and the second end being disposed in mating relationship with the planar face of the manifold adjacent the inlet end of the manifold discharge passage.

B 274,945

APPARATUS FOR MANUFACTURE OF PARTITIONED PLASTIC TUBING

Wilhelm Hegler, Goethestr. 2, Bad Kissingen, Germany

Filed July 25, 1972, Ser. No. 274,945

Claims priority, application Germany, July 31, 1971, 2138437

Int. Cl. B29d *23/03*

U.S. Cl. 425—326 B **6 Claims**

Group Art Unit 322

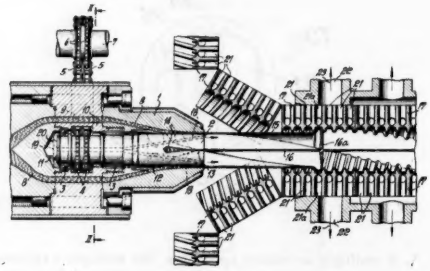
References Cited

UNITED STATES PATENTS

3,496,605	2/1970	Onaka	18/14
3,577,935	5/1971	Reinhart et al.	425/326
3,677,676	7/1972	Hegler	425/109
3,705,779	12/1972	Van Zon	425/326
3,708,253	1/1973	Lemelson	425/326 X

FOREIGN PATENTS OR APPLICATIONS

1,061,484	7/1959	Germany
1,245,582	7/1967	Germany



1. In an apparatus for the manufacture of plastic tubing comprising an extrusion head, a generally annular orifice through which molten plastic can flow, said annular orifice in fluid communication with a reservoir and a mandrel disposed within said extrusion head around which plastic flows, the improvement which comprises at least one radial discharge slit in said mandrel, through which molten plastic can flow to define a wall which slit is in fluid communication with a reservoir for molten plastic and a mold train disposed in a downstream relationship to said extrusion head, means for aspirating air from closed molds in said mold train and means for rotating said mandrel about its common axis with the longitudinal axis of the plastic tube to be formed.

B 282,252

APPARATUS FOR DRYING POLYMERIC MATERIAL

Edward J. Kosinsky, c/o Phillips Petroleum Company, Bartlesville, Okla. 74004

Filed Aug. 21, 1972, Ser. No. 282,252

Int. Cl. B29f *3/06*

U.S. Cl. 425—376 **7 Claims**

Group Art Unit 322

References Cited

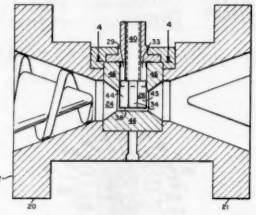
UNITED STATES PATENTS

1,727,161	9/1929	Dupuis	251/326 X
2,174,861	10/1939	Olson	251/326 X
3,463,193	8/1969	Yost	251/326 X
3,478,771	11/1969	Johnson	251/327 X
3,512,266	5/1970	Welty	34/42

FOREIGN PATENTS OR APPLICATIONS

888,219	1/1962	Great Britain	251/327 X

1. In an apparatus for removing liquid from liquid-bearing polymeric material comprising an elongated shell having an upstream feed opening and a downstream discharge zone, means in a first zone within said elongated shell for working and compacting the material passed therethrough and through a second downstream zone adjacent said discharge zone to the discharge zone of said elongated shell, a restriction means positioned between said first and second zone for restricting the passage of material from said first zone to said second zone for reducing the pressure on the polymeric material passing through said restriction means, and a die having at least one orifice and being positioned downstream of said restriction means and said second zone and at said discharge zone for reducing the pressure on the material passing through the orifice of said die, the improvement comprising:



said restriction means being a valve having a valve body, an opening extending therethrough in fluid communication with the first and second zones, and a valve plug movably positioned within said valve body, said opening and said valve plug each having sidewalls and bottom walls of matable, planar configurations, said valve plug being slidably movable into and from said opening, and said valve plug having a hexagonal cross-sectional configuration with first and second opposed sidewalls of the valve plug contacting opposed side walls of said opening.

B 256,334

HOLLOW FILAMENT SPINNERET

James Dwight Hodge, Greenville, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 24, 1972, Ser. No. 256,334

Int. Cl. D01d *3/00*

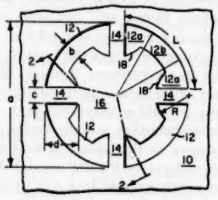
U.S. Cl. 425—461 **5 Claims**

Group Art Unit 322

References Cited

UNITED STATES PATENTS

3,313,000	4/1967	Hays	425/461
3,323,168	6/1967	VanDrunen et al.	425/461
3,600,491	8/1971	Shimoda et al.	425/382.2
3,772,137	11/1973	Batt	264/177 F UX



1. In a spinneret plate provided with at least one nozzle, for melt spinning filaments from molten polymers, said nozzle

being defined by a substantially symmetrical pattern of four arcuate end-to-end slots interrupted by webs, said nozzle forming a filament having a single hollow core the improvement comprising, said slots having ends bearing inner inwardly-tapered enlargements at the outer one-third portions thereof, adjacent ends having proximate sides straight and parallel throughout their entire lengths, said slots having outer boundaries, said outer boundaries being the arc of a circle, the inner one-third portion of said slot being of substantially uniform width, the ratio of the distance c between adjacent slots and the width b of the slots being less than unity, said single hollow core being relatively smooth.

B 348,383

AMINE SALT OF A DYESTUFF IN A KETONE SOLUTION

Jacques Wegmann, Bueckenweg 22, Bettingen; Carl Becker, Faidostrasse 9, Basel; Guenther Zwahlen, Landskronstrasse 12, Dornach, and Werner Kuster, Peter Rot-Strasse 47, Basel, all of Switzerland

Continuation of Ser. No. 94,947, Dec. 3, 1970, abandoned. This application Apr. 5, 1973, Ser. No. 348,383

Claims priority, application Switzerland, Dec. 3, 1969, 18045/69; Jan. 8, 1970, 156/70; Jan. 30, 1970, 1297/70

Int. Cl. D06p *1/26*

U.S. Cl. 8—1 XA **5 Claims**

Group Art Unit 223

References Cited

UNITED STATES PATENTS

2,828,180	3/1958	Sertorio	8/62
3,129,053	4/1964	Castle	8/94 X
3,342,542	9/1967	Morf et al.	8/173
3,510,243	5/1970	Seuret et al.	8/94 X
3,663,161	5/1972	Litzler et al.	8/174 X
3,674,420	7/1972	Sapers	8/173

1. A dyestuff preparation consisting essentially of a dispersion or solution of 5 to 75% by weight of a water-insoluble amine salt of a dyestuff selected from the group consisting of 1:2 chromium complex of an azo dyestuff, 1:2 chromium complex of a formazane dyestuff, phthaolcyanine dyestuff, diazine dyestuff, and anthraquinone sulfonic acid dyestuff, in an aliphatic or cycloaliphatic ketone having a solubility in water at room temperature of 0.1 to 10%.

B 336,902

PROCESS FOR THE SINGLE-BATH DYEING OF UNMODIFIED POLYOLEFIN FIBERS WITH METAL-CONTAINING PHTHALOCYANINE DYESTUFFS

Hans-Ulrich Von Der Eltz, Frankfurt/Main; Armand Lehinant, Offenbach/Main, and Hans-Peter Maier, Sulzbach-/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Miester Lucius & Bruning, Frankfurt, Germany

Filed Mar. 1, 1973, Ser. No. 336,902

Claims priority, application Germany, Mar. 7, 1972, 2210879

Int. Cl. D06p *1/14*

U.S. Cl. 8—62 **10 Claims**

Group Art Unit 223

References Cited

UNITED STATES PATENTS

3,097,044	7/1969	Skeuse	8/30 X
3,454,568	7/1969	Fuchs	8/1 S

1. An exhaust process for the single-bath dyeing or printing of unmodified polypropylene fibers, with metal-containing phthalocyanine dyestuffs, which comprises treating said fibers under high temperature dyeing conditions with aqueous dispersions containing

a. metal-containing phthalocyanine dyestuffs having 2 to 4 quaternary ammonium groups linked over methylene bridges to the benzene nuclei of the phthalocyanine molecule,

b. alkyl or alkylenyl-polyglycol ether or oxethylated fatty acid polyglycol ester, and

c. anionic protective colloids comprising lignin-sulfonic acid.

B 291,104

DISPERSE DYE CONCENTRATE WITH SAWDUST

Peter Gurtler, 24 Neusatzweg, Therwil, Switzerland

Filed Sept. 21, 1972, Ser. No. 291,104

Int. Cl. D06p *1/46*

U.S. Cl. 8—91 **1 Claim**

Group Art Unit 223

References Cited

UNITED STATES PATENTS

223,019	12/1879	Vaughan	8/79 X
253,230	2/1882	Sansone	8/14 X
253,286	2/1882	Sansone	8/14
1,854,363	4/1932	Aisen	8/79
2,000,120	5/1935	Bush	8/6.5 UX
2,486,562	11/1949	Iamarino	8/79 X
3,174,165	3/1965	Dunn et al.	8/158

OTHER PUBLICATIONS

Cooley, Practical Science for the Dry Cleaning Industry, 1930, pages 125–128, 133–138.

1. A composition for use as a textile dyeing agent in an extraction process consisting essentially of 40 to 70% by weight of a disperse dyestuff carried on 80 to 30% by weight of wood sawdust and 0 to 10% by weight of an adhesive selected from mineral oil, glycerin, sorbitan fatty acid ester or carboxymethylcellulose.

B 328,205

PROCESS FOR TREATING ORGANIC TEXTILES WITH FLAME RETARDANT POLYMERS MADE FROM HYDROXYMETHYLPHOSPHORUS COMPOUNDS AND GUANAZOLES

Leon H. Chance, New Orleans, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Division of Ser. No. 215,409, Jan. 4, 1972, abandoned. This application Jan. 31, 1973, Ser. No. 328,205

Int. Cl. D06m *1/00*

U.S. Cl. 8—116 P **2 Claims**

Group Art Unit 223

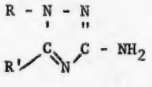
References Cited

UNITED STATES PATENTS

2,668,096	2/1954	Reeves et al.	8/116 P
2,809,941	10/1957	Reeves et al.	8/116 P
2,814,573	11/1957	Reeves et al.	8/116 P
2,993,746	7/1961	Miles et al.	8/116 P
3,054,698	9/1962	Wagner	8/116 P
3,698,854	10/1972	Donaldson et al.	8/116 P

1. A process for treating cellulosic material which comprises: phosphorous

a. treating said cellulosic material with an aqueous solution containing (i) a phosphorus compound selected from the group consisting of tetrakis(hydroxymethyl)phosphonium chloride, tris(hydroxymethyl) phosphine oxide, and tris(hydroxymethyl)phosphine and (ii) an aminotriazole selected from the group having the structure



wherein R may be H, NH_2 or an alkyl or aryl radical, and R′ may be H or NH_2, the ratio of said phosphorous compound to aminotriazole being about from 1:0.25 to 1:1.5, and the pH of the solution being about from 2.8 to 9.5,

b. curing the treated material at temperatures ranging about from room temperature to 180° C for periods of time

about from 1 minute to 18 hours, the longer periods of time being required for the lower temperatures, and

c. washing and drying the material.

B 283,300

EMULSIFYING CARRIER COMPOSITIONS AND PROCESS FOR EMULSIFYING CARRIERS CONTAINING HYDROXYARYL GROUPS

Gunther Boehmke, Leverkusen-Grossendriesch, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 24, 1972, Ser. No. 283,300

Claims priority, application Germany, Aug. 24, 1971, 2142318

Int. Cl. D06p *5/04;* **B01f** *17/12*

U.S. Cl. 8—169 **6 Claims**

Group Art Unit 223

References Cited

UNITED STATES PATENTS

2,069,215	2/1937	Chambers	8/89 X
2,683,692	7/1954	Harris	252/354 X
2,991,145	7/1961	Teot	8/89 X
3,561,915	2/1971	Matalon	8/89 X

1. In the known process for emulsifying carriers (dyeing accelerators) containing hydroxyaryl groups selected from the group consisting of o-, m- and p-hydroxydiphenyl; o-, m- and p-benzylphenol; o-, m- and p-(α-phenyl)-ethyl-phenol; benzylcresols; α-(phenyl)-ethyl-chlorophenols; phenylchlorophenols, and cresotic acid esters in aqueous dyeing baths by means of emulsifiers the improvement which comprises using as the emulsifier a mixture consisting essentially of

a. alkali metal salts and/or ammonium salts of saturated or unsaturated fatty acids substituted by 1, 2 or 3 hydroxyl groups, and

b. alkali metal salts, alkaline earth metal salts and/or ammonium salts of organic sulphonic acids possessing at least 10 C atoms, and

wherein components (a) and (b) of the said mixture are present in a weight ratio of 15 : 75 to 80 : 20 and wherein said mixture is employed in an amount of 3 to 30 percent by weight relative to the weight of the carrier.

B 314,489

POLYACRYLONITRILE BASIC DYEING PROCESS WITH ANIONIC ASSISTANT

Jaroslav Haase, Lothringerstrasse 6, 4056 Basel, Switzerland

Filed Dec. 12, 1972, Ser. No. 314,489

Claims priority, application Switzerland, Dec. 21, 1971, 18720/71

Int. Cl. D06p *5/04*

U.S. Cl. 8—169 **24 Claims**

Group Art Unit 223

References Cited

UNITED STATES PATENTS

2,133,288	10/1938	Flett	8/89 X
2,250,098	7/1941	Hardt et al.	8/89 X
2,310,074	2/1943	Gotte	8/54
3,164,566	1/1965	Horn	8/173 X
3,451,762	6/1969	Hendricks et al.	8/89 X
3,619,122	11/1971	DeMaria	8/173
3,619,123	11/1971	Waiz	8/173
3,687,603	8/1972	Abel et al.	8/173 X
3,713,768	1/1973	Wegmuller et al.	8/173 X
3,718,428	2/1973	Streck	8/173
3,765,835	10/1973	Clarke et al.	8/173 X
3,775,056	11/1973	Grossmann et al.	8/173 X

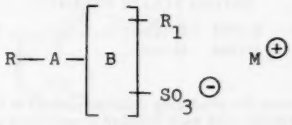
FOREIGN PATENTS OR APPLICATIONS

1,355,971	4/1963	France
1,938,227	2/1971	Germany

OTHER PUBLICATIONS

Chem. Abstracts, Vol. 48, (1954), Column 1711 i.

1. A process for dyeing textile fibre material made from polyacrylonitrile, comprising the step of treating the fibre material with a basic dye in an acidic, aqueous preparation, which further comprises as dyeing assistant an anionic compound of the formula



wherein R is an alkyl or alkylene radical with 7 to 21 carbon atoms, A is the group —CO—O— or —O—CO—, B is benzene, naphthalene or diphenyl, R_1 is hydrogen, hydroxyl, alkyl, hydroxyalkyl, alkoxy, cycloalkyl aryl, aralkyl or halogen, and M^+ represents an inorganic or organic cation.

B 315,731

PROCESS FOR INCREASING RECEPTIVITY TO FLUORESCENT WHITENING AGENTS IN RESIN-TREATED CELLULOSIC TEXTILES

Ralph J. Berni; Ruth R. Benerito, and Mary W. Pilkington, all of Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 15, 1972, Ser. No. 315,731

Int. Cl. D06p *3/00*

U.S. Cl. 8—185 **36 Claims**

Group Art Unit 223

References Cited

UNITED STATES PATENTS

3,644,082	2/1972	Berni et al.	8/188

1. An improvement process for imparting to cellulosic textiles the quality of receptivity to fluorescent whitening or brightening agents without destroying the natural or imparted physical properties of the textile, the process comprising:

a. providing sodium-cellulosate textile,

b. reacting the sodium-cellulosate textile of (a) with a tertiary butanol solution containing about from 2 to 7% glycidyltrimethylammonium chloride,

c. removing excess and unreacted glycidyltrimethylammonium chloride, and washing and drying the reacted textile,

d. reacting the cellulosic textile of (c) with an aqueous solution containing about from 6 to 20% of an N-methylolated resin selected from the group consisting of dimethyloldihydroxyethylene urea, dimethylolethylene urea, dimethylolpropylene urea, dimethylol-5-hydroxypropylene urea, dimethylolmethyl carbamate, and dimethylolethyl carbamate, and about from 0.3 to 2.0% of a Lewis acid type catalyst selected from the group consisting of zinc chloride, zinc fluoborate, zinc nitrate, magnesium chloride, and magnesium nitrate, and

e. drying and curing the reacted textile.

B 348,558

COTTON-OXIME, COTTON-SEMICARBAZONE, AND COTTON-HYDANTOIN-TEXTILE PRODUCTS OF HIGH NITROGEN CONTENT

Norman A. Portnoy, Parsippany, N.J.; Alden H. Reine, New Orleans, and Jett C. Arthur, Jr., Metairie, both of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 6, 1973, Ser. No. 348,558
Int. Cl. D06p *3/00*
U.S. Cl. 8—194 **7 Claims**
Group Art Unit 223

References Cited

UNITED STATES PATENTS

3,138,564	6/1964	Borunsky	8/DIG. 18
3,254,939	6/1966	Munzel	8/DIG. 18

2. A process for producing cellulose-oximes in the form of non-rigid textiles with high nitrogen content and good hand, the process comprising:

a. mixing 2 parts by weight of a fibrous cellulose-poly(methyl vinyl ketone) copolymer with a solution containing about 20 parts by weight of ethanol, 5 parts by weight pyridine, and a quantity of hydroxylamine hydrochloride equivalent to about 2.6 times the number of moles of ketone groups contained in the copolymer, and b. refluxing the mixture of (a) at about 82°C. and 760 torr for about 2 hours to obtain quantitative yields of fibrous cellulose-oxime.

5. The fibrous cellulose-oxime produced by the process of claim **2.**

B 336,566

USE OF AMINOALKYLENE PHOSPHONIC ACIDS FOR CORROSION INHIBITION

Alfred Powell, Montgomery, Ala., assignor to Calgon Corporation, Robinson Township, Pa.

Filed Feb. 28, 1973, Ser. No. 336,566
Int. Cl. C23f *11/14, 11/16*
U.S. Cl. 21—2.7 A **6 Claims**
Group Art Unit 223

References Cited

UNITED STATES PATENTS

3,288,846	11/1966	Irani et al.	260/502.5
3,298,956	1/1967	Irani et al.	252/389 A
3,459,793	8/1969	Shen et al.	260/502.5
3,470,244	9/1969	Crutchfield et al.	260/502.5
3,483,133	12/1969	Hatch et al.	252/389 A
3,567,768	3/1971	Shen et al.	260/502.5
3,600,470	8/1971	Lewis	252/389 A
3,668,138	6/1972	Hoover et al.	252/389 A
3,714,067	1/1973	King et al.	252/389 A

1. A method of inhibiting the corrosion of metals in a water system which comprises maintaining in the water of said system at least about 10 mg/l of a compound selected from the group consisting of 2,2'-oxybis [ethylaminodi-(methylene phosphonic acid)] and the water-soluble salts thereof.

B 314,977

PROCESS FOR THE DETERMINING OF BILIRUBIN IN FLUIDS

Gerhard Ertingshausen, New York, and Diane F. Byrd, Tarrytown, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 14, 1972, Ser. No. 314,977
Int. Cl. G01n *33/16;* **C07c** *113/00*
U.S. Cl. 23—230 B **12 Claims**
Group Art Unit 171

References Cited

UNITED STATES PATENTS

3,585,001	6/1971	Mast	23/230 B
3,682,586	8/1972	Ertingshausen et al.	23/230 B

OTHER PUBLICATIONS

Bartens et al. "Automated Determination of Serum Bilirubin" Anal. Abst. Vol. 22 January 1972 Abstract 329.

1. A process for the determination of bilirubin in a bilirubin-containing fluid which comprises the steps of:

a. forming a mixture of said bilirubin-containing fluid and a mixture of diazosulfanilic acid-1,5-naphthalene disulfonate and an accelerator selected from the group consisting of ethylene glycol and propylene glycol in an aqueous mineral acid;

b. measuring by means of a centrifugal analytical photometer an absorbance reading of the mixture at 550 nanometers after reaction between the bilirubin and the diazosulfanilic acid-1,5-naphthalene disulfonate is complete;

c. comparing the absorbance reading with the absorbance reading obtained simultaneously under the same conditions from a mixture containing a known concentration of bilirubin; and

d. determining the amount of bilirubin in said bilirubin-containing fluid.

B 409,220

FLUORESCENE PROTEIN AND PEPTIDE ANALYZER

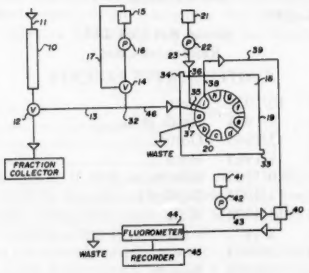
Stanley Stein, Bloomfield, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Oct. 24, 1973, Ser. No. 409,220
Int. Cl. B01d *13/00;* **G01n** *31/08, 33/16*
U.S. Cl. 23—253 R **9 Claims**
Group Art Unit 171

References Cited

UNITED STATES PATENTS

2,846,121	8/1958	Ronnebeck	23/253 R
3,182,043	5/1965	Kirkland	210/22 X
3,222,135	12/1965	Ashmead	23/259 X
3,567,389	3/1971	Coulter et al.	23/253 R
3,591,667	7/1971	Kulshrestha	210/321 X
3,763,374	10/1973	Tiffany et al.	250/432 X



1. An analyzer system which is adaptable to the fluores-

cence based assay of either protein or peptide containing samples which system comprises in combination:

A. sample stream providing means which sample stream contains either protein or peptide compounds to be assayed;

B. sample loopholder means adaptable to be in a dialysis or hydrolysis mode, said sample loopholder means comprising:

i. an outer enclosure defining an internal chamber which chamber contains dialysis solution in said dialysis mode and heating means in said hydrolysis mode; and

ii. a sample loopholder component comprising a stepping motor means, shaft means connected to said stepping motor means, a stator element having two radially disposed channel pairs and a rotator element connected to said shaft means having a plurality of channel pairs radially and and symmetrically disposed about its central axis, said plurality of channel pairs being so arranged and constructed as to serially index with each of said channel pairs in said stator elements as said rotator is rotated relative to said stator, each of said rotator channel pairs further having a sample loop bridging the two channels in each pair, said sample loop being selected from the group consisting of a semipermeable cellulose tube for the dialysis mode and an inert, non-porous, heat and alkali stable plastic for the hydrolysis mode, said rotator and said stator being held together tightly to form a liquid tight seal between them with said rotator being rotatable with respect to said stator; and

C. fluorescence detection means,

wherein said sample stream providing means is operatively connected to one channel of one of said channel pairs of said stator so as to provide a sample stream to said channel and any channel of said rotator which is indexed therewith and said fluorescence detection means is operatively connected to one channel of the other of said channel pairs so as to obtain a dialyzed or hydrolyzed sample stream for assay.

B 418,121

FLAME IONIZATION DETECTOR

Rudolf Kaiser, Dr.-Dahlem-Str 9., 6702 Bad Durkheim, Germany

Filed Nov. 21, 1973, Ser. No. 418,121

Claims priority, application Germany, Nov. 21, 1972, 2257099

Int. Cl. G01n *31/12*

U.S. Cl. 23—254 EF **10 Claims**

Group Art Unit 171

References Cited

UNITED STATES PATENTS

3,372,994	3/1968	Giuffrida	23/254 EF
3,425,806	2/1969	Karmen	23/254 EF X
3,504,976	4/1970	Gilbert, Jr.	23/254 EF
3,692,492	9/1972	Poli, Jr. et al.	23/254 E

1. A flame ionization detector comprising:

a. an enclosed detection chamber having a central axis associated therewith;

b. a collector electrode arranged in the upper portion of said chamber, essentially along said axis;

c. a first burner nozzle in the lower portion of said chamber, arranged with its outlet directed upward along said axis;

d. a salt source supported within said chamber between said collector and said first nozzle;

e. a second nozzle having its opening directed downwardly in the direction of said first burner nozzle and onto said salt source;

f. means for supplying a sample to said first nozzle;

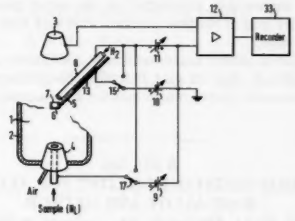
g. means for selectively supplying a fuel gas to one of said first and second nozzles;

h. a negative voltage supply;

i. means for supplying one of a ground and positive potential;

j. means coupling said negative supply to said second nozzle;

k. means for selectively coupling said first burner nozzle to one of said negative supply and said means for supplying



one of a positive and ground potential, whereby, by selectively feeding said fuel gas to said second nozzle and coupling said first nozzle to said means for supplying one of a positive and ground potential, a nitrogen or other hetero compound sample may be fed to said first nozzle for detection, and by selectively feeding said fuel gas to said first nozzle and coupling said first nozzle to said negative supply a hydrocarbon may be fed to said first nozzle and detected.

B 356,253

RING-FLANGED SLIP-JOINT FOR A REACTOR SYSTEM

Arthur R. Greenwood; Walter W. Heinze; Edward Schnitta, and Frank H. Andrejasich, all of 20 UPO Plazar, Algonquin and Mt. Prospect Rds., Des Plaines, Ill. 60016

Filed Apr. 20, 1973, Ser. No. 356,253

Int. Cl. B01j *9/12*

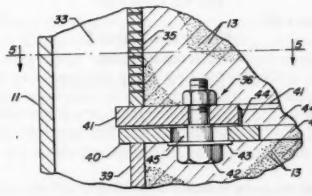
U.S. Cl. 23—288 G **3 Claims**

Group Art Unit 171

References Cited

UNITED STATES PATENTS

2,108,087	2/1938	Thayer	23/288 R
2,363,623	11/1944	Roach et al.	23/288 R
3,051,561	8/1962	Grimes	23/288 R
3,706,536	12/1972	Greenwood et al.	23/288 G



1. A catalytic reactor system providing contact of a reactant stream with catalyst particles movable through said system via gravity flow, which system comprises, in combination:

a. an elongated, vertically-disposed reaction chamber containing;

b. a tubular-form, catalyst-retaining screen, coaxially distended substantially the entire length of said chamber, having (i) a nominal internal cross-sectional area less than said chamber to provide a reactant annulus, and (ii)

a first ring flange face immovably connected to the lower peripheral extremity of said catalyst-retaining screen;

c. a tubular-form, perforated centerpipe, coaxially distended substantially the entire length of said chamber, and having a nominal cross-sectional area less than said catalyst-retaining screen to provide an annular catalyst-holding zone;

d. a tubular-form, catalyst-retaining screen support member attached at its lower peripheral extremity to a bottom portion of said chamber, and having a second ring flange face immovably connected to its upper peripheral extremity and in slidable contact with said first ring-flange face; and,

e. a flexible ribbon seal immovably connected to the inner peripheral edge of said first ring-flange face extending downwardly therefrom to contact said second ring-flange face.

B 399,766

ABRASION RESISTANT COATING FOR ALUMINUM BASE ALLOY AND METHOD

Herbert E. Ricks, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 20, 1973, Ser. No. 399,766
Int. Cl. C23b *5/00, 5/22*
U.S. Cl. 29—197 **3 Claims**
Group Art Unit 111

References Cited

UNITED STATES PATENTS

2,624,684	1/1953	Heiman	204/38 A X
2,654,701	10/1953	Calderon et al.	204/38 A X
2,995,814	8/1961	Chamness	204/33 X
3,108,006	10/1963	Kenedi et al.	204/33 X
3,455,014	7/1969	Beyer	204/40 X

1. A composite article comprising an aluminum alloy member having an abrasion resistant coating on the surface thereof, said coating consisting essentially of an inner layer of a metal selected from the group consisting of tin and zinc, a first intermediate layer of a metal selected from a group consisting of copper and bronze, a second intermediate layer of nickel, and an outer layer of a metal selected from a group consisting of tin and silver.

B 416,598

CARBON RESIDUE INHIBITOR FOR DISTILLATE FUELS

Charles A. Sandy, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 16, 1973, Ser. No. 416,598
Int. Cl. C10l *1/20*
U.S. Cl. 44—62 **10 Claims**
Group Art Unit 117

References Cited

UNITED STATES PATENTS

3,337,313	8/1967	Otto	44/62
3,645,704	2/1972	Burkard et al.	44/62

1. A fuel oil composition comprising a fuel oil that boils in a range from about 250°F. to 800°F., and at least one member selected from the oil-soluble polymer group

i. halogen-containing polypropylene

ii. halogen-containing polybutylene

iii. halogen-containing copolymer of propylene and butylene

wherein the polymer has a molecular weight from about 400 to 3,000 and contains from about 0.1% to 25% by weight of halogen, the halogen being selected from the group chlorine and bromine, the polymer being present at a concentration from about 0.004 to 0.4 percent weight of the composition.

B 375,220

METHOD OF GASIFYING CARBONACEOUS MATERIAL

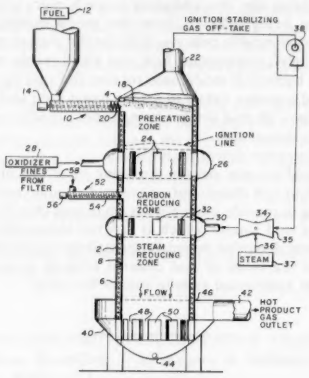
John Henry Fernandes, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed June 29, 1973, Ser. No. 375,220
Int. Cl. C10j *3/08*
U.S. Cl. 48—197 R **8 Claims**
Group Art Unit 173

References Cited

UNITED STATES PATENTS

2,042,998	6/1936	Johnson	48/214
2,111,579	3/1938	Winkler et al.	48/203
2,133,496	11/1933	Winkler et al.	48/211
2,281,562	5/1942	Ditto et al.	48/200
2,558,746	7/1951	Gaucher	48/206
2,657,124	10/1953	Gaucher	48/197
2,662,006	12/1953	Eastwood	48/197
2,691,573	12/1950	Mayland	48/210
2,830,883	4/1958	Eastman	48/206
3,186,830	1/1965	Moore et al.	75/43



1. A method for producing a fuel gas from a carbonaceous material which comprises:

a. providing a substantially vertical shaft furnace having a preheating zone adjacent the upper end of the furnace, an oxidation zone underlying said preheating zone, and a reducing zone underlying said oxidation zone and adjacent the lower end of the furnace;

b. introducing a solid carbonaceous material having sufficient compressive strength to support a carbon matrix into said preheating zone;

c. oxidizing said carbonaceous material in said oxidation zone by reacting said carbonaceous material with free oxygen to form an intermediate gaseous product, a char matrix containing carbon, and molten slag;

d. reacting said intermediate gaseous products with steam and with carbon from said char matrix in said reducing zone to form a product gas comprising principally hydrogen and carbon monoxide;

e. flowing said molten slag downward through said char matrix;

f. removing said slag through the bottom of said furnace shaft;

g. maintaining an upward flow of a portion of the gases formed in said oxidation and reducing zones sufficient to maintain the level of ignition of said carbonaceous material in said oxidation zone at a predetermined level, said upward flow of gas passing through said preheating zone and contacting said carbonaceous material, whereby said material is dried, devolatilized and heated to a temperature just under its igni-

tion temperature, the volatile matter driven from the carbonaceous material being carried from said furnace along with said portion of said gases and re-introducing said portion of the gases and volatile matter into said furnace in said reducing zone;

h. exhausting the balance of said product gas from the lower end of said furnace.

B 444,614
COAL INJECTION SYSTEM

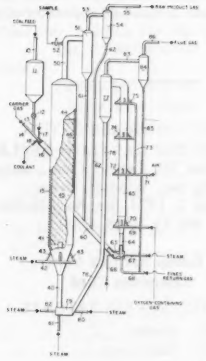
Christian W. Knudsen, 4019 Highknoll Ln., Seabrook, Tex. 77586, and Hermann E. Von Rosenberg, 105 Crow Rd., Baytown, Tex. 77520

Filed Feb. 21, 1974, Ser. No. 444,614
Int. Cl. C10j *3/06*
U.S. Cl. 48—197 R **10 Claims**
Group Art Unit 173

References Cited

UNITED STATES PATENTS

2,577,632	12/1951	Roetheli	48/203
2,941,877	6/1960	Grahame	48/196



1. In a process wherein finely divided carbonaceous solids which contain volatilizable hydrocarbon constituents and have an initial softening point and a resolidification point higher than said initial softening point are introduced into a fluidized bed of char particles maintained at a temperature above said resolidification point for devolatilization and wherein gases containing entrained fines are withdrawn overhead from said fluidized bed, the improvement which comprises entraining said carbonaceous solids in a preheated stream of carrier gas having a temperature in excess of about 300° F. but below said initial softening point, injecting said stream of carrier gas containing the entrained solids into said fluidized bed through a fluid-cooled nozzle at a superficial gas velocity between about 15 and 1,000 feet per second, monitoring the entrained fines content of said gases withdrawn overhead from said fluidized bed, and regulating the velocity at which said carrier gas and entrained carbonaceous solids are injected into the bed through said nozzle in response to changes in said entrained fines content of said gases to produce controlled attrition of agglomerated particles in said bed.

B 395,671
PROCESS FOR MAKING LIQUID AND GASEOUS FUELS FROM CAKING COALS

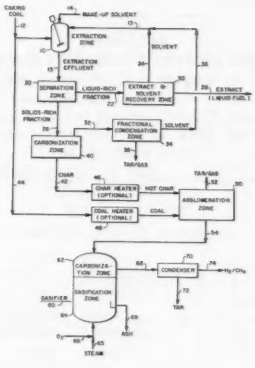
Charles H. Rice, 3327 Brookdale Dr., Pittsburgh, Pa. 15241

Continuation-in-part of Ser. No. 215,160, Jan. 3, 1972, abandoned. This application Sept. 10, 1973, Ser. No. 395,671
Int. Cl. C10g *1/04;* **C10j** *3/00, 3/16*
U.S. Cl. 48—210 **4 Claims**
Group Art Unit 171

References Cited

UNITED STATES PATENTS

2,807,529	9/1957	Tarbox	48/197 R X
3,073,751	1/1963	Gorin et al.	201/5
3,188,179	6/1965	Gorin	48/197 R X



1. In a coal conversion process which includes extraction by means of a solvent of a finely divided caking coal, whereby a mixture of extract, solvent and undissolved carbonaceous residue is produced, the IMPROVEMENT which comprises:

a. effecting separation of said mixture into at least two parts, the first part being a liquid-rich fraction containing principally extract and solvent, and the second part being a solids-rich fraction, the solids having a finer size consist than said feed coal;

b. subjecting said solids-rich fraction to carbonization to yield finely divided char having a size consist for the greater part less than ⅛ inch;

c. mixing caking coal having a size consist for the greater part less than ⅛ inch with said char;

d. subjecting the mixture from step (c) to agglomeration above the temperature at which the caking coal begins to soften, whereby agglomerates are formed having a minimum size of ⅛ inch; and

e. subjecting said agglomerates first to carbonization and then to gasification in a downwardly moving bed gasifier, whereby a gaseous fuel is produced.

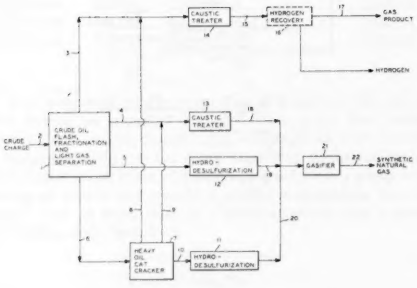
B 359,791
PROCESS FOR MAKING SYNTHETIC FUEL GAS FROM CRUDE OIL

Rolland E. Dixon, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 14, 1973, Ser. No. 359,791
Int. Cl. C10g 37/10
U.S. Cl. 48—211 5 Claims
Group Art Unit 173

References Cited
UNITED STATES PATENTS

3,050,457	8/1962	Wilson	208/67
3,223,745	12/1965	Davison	260/672
3,474,027	10/1969	Vautrain et al.	208/227
3,487,011	12/1969	Henke et al.	208/16
3,506,417	4/1970	Hepp et al.	48/197
3,531,267	9/1970	Gould	48/213
3,551,124	12/1970	Takayuki Iwaki et al.	48/214
3,595,805	7/1971	Cohn et al.	252/373
3,732,085	5/1973	Carr et al.	48/214
3,778,239	12/1973	Gambs et al.	48/197 R X



1. A process for the conversion of a crude oil to a synthetic natural gas which comprises separating the crude oil into a first fraction containing ethane and lighter gases, a second fraction containing propane and butane, a third fraction which is normally liquid and will contain hydrocarbons boiling up to about 400°F and a fourth residual fraction comprising tapped crude oil; treating said first and second fractions to remove sulfur therefrom as sulfur or sulfur compounds; hydrodesulfurizing said third fraction and catalytically cracking substantially to extinction said fourth fraction to obtain a lower boiling product which product is then hydrodesulfurized, thereafter combining at least two of the last three fractions to form a charge stock for a synthetic natural gas producing operation and catalytically converting said charge stock to form a synthetic natural gas.

B 387,818
NON-NEWTONIAN LIQUID AND METHOD FOR WET SCRUBBING STACK GASES

William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Filed Aug. 13, 1973, Ser. No. 387,818
Int. Cl. B01d 47/06
U.S. Cl. 55—85 7 Claims
Group Art Unit 176

References Cited
UNITED STATES PATENTS

3,320,906	3/1967	Domshidy	55/89
3,761,406	9/1973	Tsuk	210/52
3,795,486	3/1974	Ekman	55/73

1. A process for removing pollutants from a current of gaseous wastes which comprises,

providing a non-Newtonian scrubbing liquid containing water, an alkaline hydroxide or carbonate, and a complexible polymeric material,

spraying said scrubbing liquid against said current of gaseous wastes at an initial velocity sufficient to form droplets which will penetrate the gaseous current and remove pollutants therefrom, thereby forming a sludge material, and

contacting the sludge material with a bi- or trivalent salt so as to cause said polymeric material to form a complex structure which will entrain the solids content of the sludge but release a substantial portion of water therefrom.

B 430,106
MIST ELIMINATOR GAS FLOW DEFLECTOR

George William Fallon, III, Enfield, Conn., assignor to Combustion Engineering Inc., Windsor, Conn.

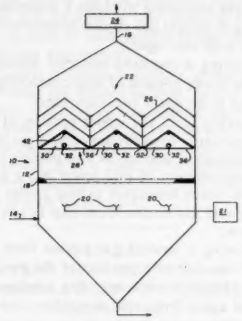
Filed Jan. 2, 1974, Ser. No. 430,106
Int. Cl. B01d 47/00
U.S. Cl. 55—230 8 Claims
Group Art Unit 177

References Cited
UNITED STATES PATENTS

1,554,185	9/1925	Preble	55/242 X
2,736,390	2/1956	Wickland	55/242 X
2,878,892	3/1959	Field	55/242 X
3,407,045	10/1968	Temple	55/242 X
3,444,670	5/1969	Hungate	55/242 X
3,499,264	3/1970	Ekman	55/257 X

1. In a mist eliminator comprising a plurality of spaced plates between which upwardly flowing gases are adapted to pass and presenting inclined surfaces on which solid particles carried by the gas accumulate, means for dislodging said accumulated particles comprising an elongated wash lance, underlying said plates, having at least one spray nozzle therein for discharging a stream of water at high pressure directed toward said inclined surfaces, means for moving said wash lance backwardly and forwardly with respect to said plates so that the discharged water impinges substantially the entire surface of said plates, means for deflecting the gas flow from the region of said plates at which said stream of water is directed, said deflecting means comprising a generally U-shaped deflector having a bottom plate underlying said wash lance and two side plates extending upward from opposing sides of said bottom plate in planes transverse to the longitudinal axis of said wash lance and on opposite sides of each of said at least one spray nozzle, said side plates containing opposing openings through which said wash lance extends, said openings

being of a size to permit relative rotation of said wash lance with respect to said deflector, and means for causing said



deflecting means to move backwardly and forwardly with said wash lance.

B 313,098

MULTISTAGE CYCLONIC SEPARATOR

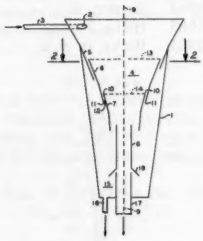
Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 7, 1972, Ser. No. 313,098
Int. Cl. B01d *45/12*
U.S. Cl. 55—345 **2 Claims**
Group Art Unit 177

References Cited

UNITED STATES PATENTS

2,067,710	1/1937	Jacobsen	55/459 X
2,252,581	8/1941	Saint-Jacques	55/456 X
2,708,033	5/1955	Thomas	209/144 X
3,283,480	11/1966	Szego	55/392 X
3,358,844	12/1967	Klein et al.	55/456 X
3,719,032	3/1973	Cash	55/466 X



1. A separator comprising:

a. a chamber;

b. a truncated cone comprised of a plurality of coaxially aligned conical sections of decreasing inlet diameters positioned in superimposed relationship, the upper portion of the uppermost conical section forming the upper portion of said chamber, the lowermost portion of said uppermost conical section and the remaining conical sections being positioned within said chamber, said truncated cone terminating within said chamber at an intermediate point along the vertical axis thereof, each of said conical sections having an inlet diameter greater than its outlet diameter, the lower portion of said uppermost conical section of said truncated cone extending angularly into said chamber and beneath the upper rim of the next lower conical section, each of the lower conical sections positioned within said chamber having its inlet or upper rim positioned within the outlet or lower rim of the next superimposed section to form an annular passageway therebetween, each of said conical sections consisting of an upper conical portion and a lower conical portion, the walls of said upper conical portion being positioned at a first acute angle relative to the vertical axis of said separator and the walls of said lower conical portion being positioned at a second acute angle relative to said axis, said second angle being less than said first angle;

c. a collection section in a lower portion of said chamber in open communication with said passageways;

d. first outlet conduit means opening downwardly from said collection section;

e. second outlet conduit means opening downwardly from said chamber, the upper terminus of said second outlet conduit being positioned within the lower portion of the lowest of said conical sections and in spaced relationship therefrom to form an annulus therebetween; and

f. an inlet conduit means opening tangentially into an upper portion of said uppermost conical section forming the upper portion of said chamber.

B 408,749

HIGH EFFICIENCY UNIT FILTER

Karl L. Westlin, Louisville, Ky., assignor to American Air Filter, Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 219,677, Jan. 21, 1972, abandoned. This application Oct. 24, 1973, Ser. No. 408,749
Int. Cl. B01d *46/52*
U.S. Cl. 55—500 **1 Claim**
Group Art Unit 177

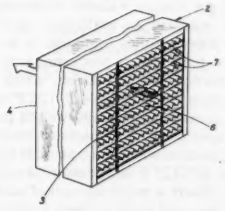
References Cited

UNITED STATES PATENTS

2,681,155	6/1954	Graham	210/493
2,764,258	9/1956	Bub et al.	55/521
2,915,426	12/1959	Poelman	210/493 X
2,952,333	9/1960	Bush	55/500
3,189,179	6/1965	McMichael	210/493 X
3,242,656	3/1966	Murphy	210/493 X
3,479,018	11/1969	Jaye	55/521 X
3,581,479	6/1971	Goulet	55/521 X
3,692,184	9/1972	Miller	55/498 X

FOREIGN PATENTS OR APPLICATIONS

599,661	6/1960	Canada	210/493
605,848	6/1960	Italy	210/493
1,292,392	3/1962	France	210/493
536,592	9/1955	Belgium	55/500



1. A filter comprising: an open ended housing having an upstream dirty gas inlet and a downstream clean gas outlet, said housing having disposed therein a filter core which includes (a) a strip of filter medium folded upon itself at longitudinally spaced intervals to provide a plurality of stacked pleats within said housing extending between opposite walls thereof, and having successively alternating pleat fold turns; and (b) a

plurality of corrugated thin metallic foil spacer members disposed within and extending along the flanks of said pleats to space the same, said spacer members being laterally spaced from said pleat fold turns a distance equal to at least one-half the overall height of said spacer members, each of said spacer members being adhesively secured to said filter medium by at least two continuous one piece beads of adhesive, said adhesive in its uncured state having a viscosity in the range of 5,000–10,000 centipoises at a temperature of 85°F, said adhesive further being disposed across an exterior face of said filter core and in its cured state securing said spacer members thereto and providing horizontal and vertical stability to said filter core thereby preventing movement of said spacer element relative said filter pleats and to prevent said filter core and housing from racking.

B 421,383

REMOVAL OF MOISTURE FROM A NATURAL GAS STREAM BY CONTACTING WITH A LIQUID DESICCANT-ANTIFREEZE AGENT AND SUBSEQUENTLY CHILLING

Ernest A. Harper, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 101,240, Dec. 24, 1970, abandoned. This application Dec. 3, 1973, Ser. No. 421,383

Int. Cl. F25j *3/00, 3/02*

U.S. Cl. 62—20 **7 Claims**

Group Art Unit 175

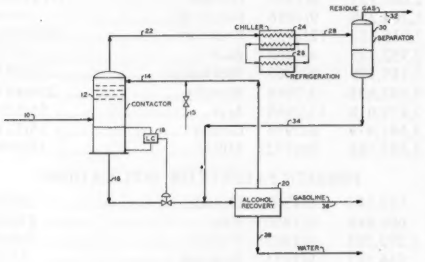
References Cited

UNITED STATES PATENTS

3,330,124	7/1967	Marshall	55/32
3,531,915	10/1970	Nagel	55/32

FOREIGN PATENTS OR APPLICATIONS

1,133,497	7/1962	Germany	55/32



1. A process for reducing the moisture content of a moisture-containing gas stream without substantial moisture removal prior to injecting an antifreeze agent into said gas stream so as to prevent solids formation in said gas stream in a subsequent low temperature processing step, which process comprises: contacting said gas stream which is at an atmospheric temperature in the range 40°–125°F with an aqueous liquid solution containing 51 to 90 weight percent of a low boiling (high vapor pressure) desiccant-antifreeze agent and 49 to 10 weight percent water in an amount and at a temperature in the range 40°–125°F and pressure conditions which are sufficient to (a) absorb a major amount of said moisture from said gas stream into said agent to form a water-agent solution and (b) simultaneously vaporize an amount of said agent into said gas stream removed from said contacting sufficient to prevent said solids formation from residual moisture remaining in said gas stream in a subsequent low temperature processing operation, and chilling said gas stream to a temperature sufficient to condense substantially all of the propane and heavier hydrocarbons therefrom and form a condensate comprising said condensed propane and heavier hydrocarbons, water, and said agent, but at a temperature sufficiently above the eutectic freezing point for the water-agent solution to prevent freezing of the water-agent solution and formation of solids during said chilling.

6. A process according to claim 1 comprising the steps of:

a. contacting a natural gas stream countercurrently in a contacting zone with said agent;

b. withdrawing a moisture-enriched stream of said agent from the lower portion of said contacting zone and passing same to an agent recovery zone;

c. withdrawing from the upper portion of said contacting zone a moisture-lean stream of said gas now containing a small amount of said agent and passing same to a chiller zone, said amount of said agent being sufficient to prevent said solids formation in said chiller zone;

d. passing said gas stream from step (c) to a phase separation zone;

e. withdrawing a treated gas stream from said separation zone of step (d) as a product of the process;

f. passing a liquid phase comprising condensed hydrocarbon and said agent from said separation zone of step (d) to said agent recovery zone;

g. withdrawing a stream of condensed hydrocarbon from said agent recovery zone as another product of the process;

h. withdrawing a stream of water from said agent recovery zone;

i. withdrawing a stream comprising recovered liquid desiccant-antifreeze agent from said recovery zone; and

j. returning said recovered agent of step (i) to said contacting zone in step (a) as the agent used therein.

B 359,174

METHOD OF MAKING IMPROVED FIBER OPTIC CONDUIT

Richard R. Strack, Southbridge, Mass., and Merton L. Smith, Woodstock, Conn., assignors to American Optical Corporation, Southbridge, Mass.

Filed May 10, 1973, Ser. No. 359,174

Int. Cl. C03c *25/02*

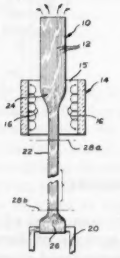
U.S. Cl. 65—4 **6 Claims**

Group Art Unit 173

References Cited

UNITED STATES PATENTS

2,995,970	8/1961	Hicks, Jr. et al	65/4 X
3,119,678	1/1964	Bazinet, Jr.	65/DIG. 7
3,166,395	1/1965	Hicks, Jr.	65/4
3,193,363	7/1965	Hicks, Jr. et al	65/4



1. The method of making a drawn multifiber conduit including the steps of:

substantially uniformly heating a relatively large section of a bundle of juxtapositioned glass clad glass optical fibers having interstices therebetween to a temperature suitable for rapid drawing of at least a substantial portion of said section to the size desired of said multifiber conduit, said substantial portion of said heated section having a suffi-

cient volume of materials to yield at least the entire length and diametral size desired of said conduit and said interstices being kept open adjacent opposite ends of said section of said bundle for free outgasing thereof continuously during said heating to said drawing temperature, said heated section of said bundle being disposed adjacent to a chilling atmosphere;

holding said bundle of fibers stationary, gripping one of its ends and drawing the heated section thereof rapidly longitudinally into said chilling atmosphere and to the length and cross-sectional size desired of said conduit, said rapidity of drawing being sufficient to substantially immediately quench said drawn conduit in said chilling atmosphere thereby avoiding appreciable interstitial and other internal gas bubble formations.

B 429,442
METHOD OF FABRICATING A FLUOROCARBON-FILLED MULTIPLE GLAZED WINDOW UNIT

Helmut Franz, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 28, 1973, Ser. No. 429,442
Int. Cl. C03b *23/24*
U.S. Cl. 65—24 **3 Claims**
Group Art Unit 173

References Cited

UNITED STATES PATENTS

2,725,320	11/1955	Atkeson et al.	65/24 X
3,360,351	12/1967	Murray et al.	65/24

1. In a method of fabricating a welded, fluorocarbon-filled multiple glazed window which involves the steps of cleaning a pair of glass sheets, depositing a separating agent on at least one of the surfaces of the glass sheets, placing the sheets in face-to-face contact such that the separating agent is between the facing surfaces of the sheets, preheating the sheets while in face-to-face contacting relationship and then finally heating the sheets to fuse the edge portions of the sheets together, the improvement comprising:

a. depositing a finely divided silica containing greater than about 98 percent by weight silica as the separating agent between the facing surfaces of the glass sheets; said silica being substantially free of chromium, titanium, tin, iron, vanadium and molybdenum.

B 373,326
APPARATUS AND METHOD FOR IMPROVED GLASSWARE COATING

Clement V. Fogelberg, and John M. Kujave, both of Arvada, Colo., assignors to Columbine Glass Company, Wheat Ridge, Colo.

Filed June 25, 1973, Ser. No. 373,326
Int. Cl. C03c *17/10*
U.S. Cl. 65—60 **12 Claims**
Group Art Unit 173

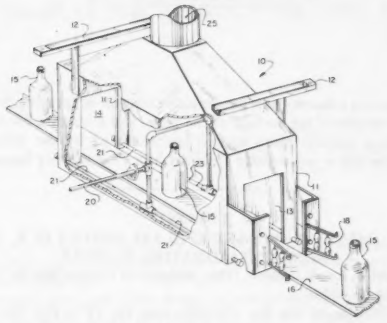
References Cited

UNITED STATES PATENTS

2,414,923	1/1947	Batcheller	117/105.3
3,561,940	2/1971	Scholes	65/60

1. Glassware treating apparatus, comprising: an enclosure having entrance and exit openings defined in opposite ends thereof, conveyor means positioned adjacent the lower portion of the enclosure and aligned with both the entrance and exit openings, and treatment gas distribution means located with the enclosure to provide streams of treatment gas within the enclosure, all of such streams being directed partially towards the conveyor directions between about 10° and 80° from the direction of travel of the conveyor belt with a substantial component of velocity of the treatment gas streams being in the direction of travel of the conveyor means, whereby glassware carried through the enclosure on the conveyor means tends to travel with the moving treatment gas rather than through the treatment gas.

6. Glassware treating apparatus, comprising: an enclosure with entrance and exit openings defined in opposite ends thereof, a conveyor belt positioned at the lower portion of the enclosure and aligned through both the entrance and exit openings, conduit means communicating both with the exterior and interior of the enclosure for supplying treatment gas



to the interior of the enclosure, treatment gas manifolds connected to the conduit means and disposed in the enclosure along opposite sides of the conveyor belt, and inlet orifices defined in the manifolds and all oriented with a substantial component in the direction of travel of the conveyor belt and with a component in the direction of the glass ware.

12. A method of treating glassware with a treatment gas dispersed in a carrier gas, comprising: conveying glassware through an enclosure and directing all streams of treatment gas and carrier gas both towards the glassware and with a substantial component of movement of the treatment gas in the direction in which the glassware is conveyed.

B 438,706
PROCESS AND APPARATUS FOR PRODUCING GLASS HAVING METAL OXIDE COATING

Akira Kushihashi; Yutaka Fuziwara, both of Ichihara, and Naotomo Akashi, Maisuru, all of Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed Feb. 1, 1974, Ser. No. 438,706
Int. Cl. C03r *17/00*
U.S. Cl. 65—60 **9 Claims**
Group Art Unit 173

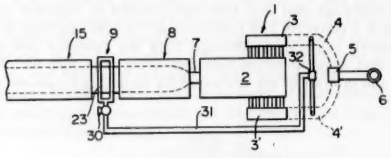
References Cited

UNITED STATES PATENTS

3,516,811	6/1970	Gatchet et al.	65/60
3,573,888	4/1971	Bogart	65/60 X
3,676,097	7/1972	Plumat et al.	65/60 X
3,681,042	8/1972	Edwards et al.	65/60 X
3,689,304	9/1972	Bamford	65/60 X

1. A process for producing glass having a metal oxide coating, which comprises a step of coating the surface of high temperature glass with a heat-decomposable metal compound or its solution, a step of sucking and removing exhaust gases generated in said step from the vicinity of the surface of the glass, and a step of feeding the exhaust gases so removed into a regenerator chamber of a glass melting furnace and then releasing them into the atmosphere.

6. An apparatus for producing glass having a metal oxide coating, comprising means for spraying a heat-decomposable metal compound or its solution onto the surface of glass held at a high temperature, exhausting means for sucking and



removing exhaust gases generated as a result of spraying, from the vicinity of the surface of the glass, and a conduit for conducting exhaust gases sucked and removed by the exhaust means into a regenerator chamber of a glass melting furnace.

B 305,881

METHOD OF MAKING GLASS AMPULS IN A NON-CONTAMINATING MANNER

Albert D. Lewis, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 170,555, Aug. 10, 1971, Pat. No. 3,719,463. This application Nov. 13, 1972, Ser. No. 305,881

Int. Cl. C03b *23/12*

U.S. Cl. 65—110 **1 Claim**

Group Art Unit 173

References Cited

UNITED STATES PATENTS

2,582,818	1/1952	Coby	65/105
3,375,948	4/1968	Creevy et al	65/105 X
3,719,463	3/1973	Lewis	65/113

1. A method of forming two ampuls which are hermetically sealed and vacuum released from a one-piece glass tube comprising the steps of:

heating a glass tube to a deformation temperature;

forming two ampul bodies by sealing the ends of said tube and drawing the center section of the tube to a degree to form a constricted portion thus forming a sealed ampul body at each end of the end portion of the tube length;

applying a small hydrogen oxygen flame about 0.005 inches in diameter to each ampul body to soften a portion of the glass, and then through the combined effort of the effect of the softened glass and a pressure difference within the ampuls due to a partial vacuum established during the forming process, forming a small hole in the glass ampul body thereby releasing the vacuum and equalizing the interior and exterior air pressure;

removing said flame thereby causing the formed hole to close immediately while the glass of the ampul nody is still softened thus hermetically sealing the ampul;

severing the common glass stem in the constricted section between the ampul bodies to form two sterile vacuum released ampuls from a one-piece glass tube.

B 440,863

PASS THROUGH SHEARS FOR MOLTEN GLASS FEEDER

Frederick Joseph Wythe, Hebron, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed Feb. 8, 1974, Ser. No. 440,863

Int. Cl. C03b *5/38*

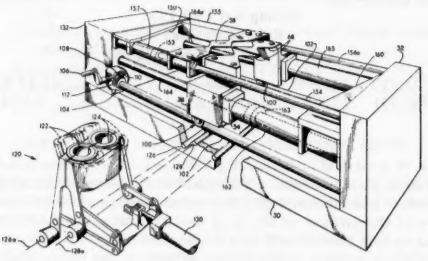
U.S. Cl. 65—334 **9 Claims**

Group Art Unit 173

References Cited

UNITED STATES PATENTS

1,174,173	3/1916	Manning	65/334 X
1,879,690	9/1932	Kadow et al	65/334 X
1,906,650	5/1933	Soubier	65/334 X
2,271,004	1/1942	Gray	65/334 X
3,567,418	3/1971	Hoette	65/334



1. Apparatus for use beneath the outlet spout of a molten glass feeder of the type adapted to form one or more vertical streams of molten glass to be severed, said apparatus comprising:

a. a pair of horizontally opposed double edged shear blades, each of which blades has a leading cutting edge and a trailing cutting edge on the opposite side thereof,

b. a horizontally reciprocal carriage for each of said blades, each of said carriages being moveable in a forward direction and also a rearward direction,

c. a shear structure adapted to be mounted to the feeder bowl and having upper and lower sets of guide rails for slidably supporting said carriages so that said shear blades move in closely spaced horizontal paths below the feeder bowl outlet spout, and

d. reversible fluid motor means for reciprocating said carriages in opposite directions so that the leading edge of one blade cooperates with the trailing edge of the other blade to sever the molten glass stream generally during the midpoints of the movement of said carriages and so that movement of said carriages in their opposite directions respectively causes the trailing edge of said one blade and leading edge of said other blade to sever the molten glass stream generally during the midpoint of movement of said carriages.

B 207,272

SEGREGATION PROCESS FOR BENEFICIATING NICKEL, COPPER, OR COBALT OXIDIC ORE

Raymond John Davidson, Johannesburg, South Africa, assignor to Nilux Holding Societe Anonyme, Luxembourg

Filed Dec. 13, 1971, Ser. No. 207,272
Claims priority, application South Africa, Dec. 11, 1970, 70/8391; Apr. 8, 1971, 71/2269
Int. Cl. C22b *1/08*
U.S. Cl. 75—1 **4 Claims**
Group Art Unit 115

References Cited

UNITED STATES PATENTS

1,368,885	2/1921	Bradford	75/113
1,679,337	7/1928	Moulden et al.	75/117 X
1,943,337	1/1934	Mitchell	75/111
2,085,114	6/1937	Mitchell	75/112 X
2,733,983	2/1956	Daubenspeck	75/82 X
3,453,101	7/1969	Takahashi et al.	75/82 X
3,457,037	7/1969	Aramendia et al.	75/1 X
3,466,169	9/1969	Nowak et al.	75/113 X
3,725,043	4/1973	Kawai et al.	75/72

FOREIGN PATENTS OR APPLICATIONS

18,763	1903	Great Britain	75/112
377,705	7/1932	Great Britain	75/112
301,342	11/1928	Great Britain	75/112

1. In a method of beneficiating an oxidic ore or ore concentrate material containing silicate minerals and nickel, copper or cobalt by the segregation process comprising mixing the oxidic material with a halide salt and a reducing agent while at an elevated temperature; the improvement comprising adding ferrous or ferric oxide to the oxidic material to increase the active iron content of thereof and to form fayalite.

B 420,568

PROCESS FOR PRODUCING PELLETS WITH CEMENT

Shunsaku Shimada, and Tadahiro Inazumi, both of Tokai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 30, 1973, Ser. No. 420,568
Int. Cl. C21b *1/24;* **C04b** *7/22*
U.S. Cl. 75—3 **2 Claims**
Group Art Unit 115

References Cited

UNITED STATES PATENTS

1,104,124	7/1914	Mathesuis	75/3
1,175,933	3/1916	Dery	75/3
1,315,315	9/1919	Lammerhirt	75/3
2,363,371	11/1944	Vignos	75/3
2,887,392	5/1959	Lolley	106/104 X
2,910,372	10/1959	Ruskin	106/89
3,235,371	2/1966	Valin et al.	75/3
3,374,085	3/1968	Stove	75/3
3,490,895	1/1970	Svensson	75/3

FOREIGN PATENTS OR APPLICATIONS

45-18460	6/1970	Japan	106/89

1. A process for producing pellets, which comprises blending **98** to **60%** by weight of iron ores and **2** to **40%** by weight of a mixture comprising **95** to **15%** by weight of cement and **5** to **85%** by weight of iron containing powders smaller than **100** meshes with addition of **9** to **20%** by weight of water on the basis of the mixture.

B 282,819

RECOVERY OF SILVER FROM GELATINOUS PHOTOGRAPHIC WASTES

Matyas Korosi, Montmorency, Victoria, Australia, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 22, 1972, Ser. No. 282,819
Int. Cl. C22b *11/00*
U.S. Cl. 75—118 **9 Claims**
Group Art Unit 113

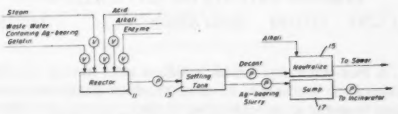
References Cited

UNITED STATES PATENTS

3,748,123	7/1973	Bakker	423/38 X

OTHER PUBLICATIONS

M. Sramek, Chemical Abstracts, 4715g, (1963), Vol. 59.



1. A process for recovering silver in the form of silver metal or compounds from waste wash waters of emulsion manufacture comprising:

mixing with said wash waters a proteolytic enzyme endopeptidase which is a bacterial enzyme prepared from *Bacillus subtillis* and which is further characterized by the ability to react with gelatin to produce a peptide,

maintaining said wash waters at an alkaline pH during reaction of said enzyme therewith;

introducing acid into said wash waters in sufficient amount to develop an acid pH corresponding to the isoelectric point thereby to effect the precipitation of silver metal or compounds and forming a supernatant liquid, and

separating a concentrate of silver metal or compounds and said supernatant liquid from one another.

B 289,883

ELECTROMAGNETIC STAINLESS STEEL HAVING EXCELLENT MACHINABILITY

Tetsu Okato, and Isao Sekio, both of Nagoya, Japan, assignors to Daido Seiko Kabushiki Kaisha, Nagoya, Japan

Filed Sept. 18, 1972, Ser. No. 289,883
Int. Cl. C22c *39/04*
U.S. Cl. 75—124 **4 Claims**
Group Art Unit 111

References Cited

UNITED STATES PATENTS

2,121,001	1/1938	Arness	75/126 M
2,255,895	9/1941	Besgemer	75/128 P
2,615,367	10/1971	Taczyn	75/126 M
3,607,246	9/1971	Kalita	75/124
3,634,074	1/1972	Ito	75/126 M
3,645,722	2/1972	Aulenbach	75/126 M
3,723,103	7/1970	Kato	75/123 F

1. An electromagnetic stainless steel having improved machinability consisting essentially of up to **0.05%** carbon, 11 to 20 percent chromium, silicon as a magnetic property improving alloy element in an amount up to 6 percent, aluminium as a magnetic property improving alloy element in an amount up to 5 percent, at least one machinability improving alloy element selected from the group consisting of 0.03 to 0.40 percent lead, 0.001 to 0.009 percent calcium and 0.01 to 0.30 percent tellurium, and the balance iron.

B 416,399

FREE-MACHINING, CORROSION-RESISTANT FERRITIC STAINLESS STEEL AND ARTICLE

Elbert E. Denhard, Jr., Towson, and William C. Clarke, Dundalk, both of Md., assignors to Armco Steel Corporation, Middletown, Ohio

Continuation-in-part of Ser. No. 395,058, Sept. 7, 1973, abandoned. This application Nov. 16, 1973, Ser. No. 416,399
Int. Cl. C22c 39/16
U.S. Cl. 75—126 C 9 Claims
Group Art Unit 111

References Cited

UNITED STATES PATENTS

3,000,730	9/1961	Tanczyn	75/126 C
3,645,722	2/1972	Aulenbach	75/128 P
3,799,765	3/1974	Clarke	75/126 C

FOREIGN PATENTS OR APPLICATIONS

1,137,295	12/1968	Great Britain	75/126 L

1. A free-machining ferritic stainless steel having excellent resistance to corrosion in environments containing acids chosen from the group consisting of citric, acetic, phosphoric, carbonic and mixtures thereof, said steel consisting essentially of up to about 0.15% carbon, from about 15% to about 25% chromium, less than about 1.0% nickel, 0.50% maximum manganese, from 0.25% to 0.60% sulfur, from 0.7% to 1.75% molybdenum, about 1.0% maximum silicon, about 0.06% maximum phosphorus, and balance substantially iron except for incidental impurities, all percentages being by weight, the manganese to sulfur ratio being less than about 2:1, whereby the sulfur is predominantly in the form of chromiumrich sulfides.

B 318,195

METAL DIES OR MOLDS CONTAINING COOLING CHANNELS BY SINTERING POWDERED METALS

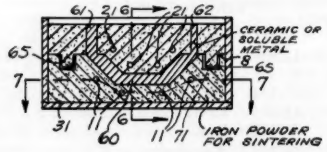
Hanji Umehara; Takashi Kimura, and Hiroshi Hamamoto, all of Nagoya, Japan, assignors to Kabushiki Kaisha Toyota, Chuo Kenkyusho Aichi-ken, Japan

Continuation of Ser. No. 84,335, Oct. 27, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 318,195
Claims priority, application Japan, Nov. 8, 1969, 44-89965
Int. Cl. B22f 1/00
U.S. Cl. 75—208 R 12 Claims
Group Art Unit 223

References Cited

UNITED STATES PATENTS

3,706,550	12/1972	Umehara et al.	75/200



1. A method for producing a die or mold from sintered powder material and having at least one internal channel formed therein for conducting a heat transfer medium into, through, and out of the mold, comprising placing a first layer of sintering powder selected from the group consisting of iron, iron-carbon, copper, copper alloy, tungsten carbide and titanium carbide in a frame, forming a mother mold conforming in size and configuration to a desired mold cavity, forming a pattern of long and slender shape having a desired surface configuration corresponding to that of said internal channel for conducting a heat transfer medium and which complements the surface of the desired mold cavity, said pattern being made of metal infiltratable into the pores of said sintering powder and having a lower melting point than that of said sintering powder, at least partially embedding said mother mold in said layer of sintering powder, adding a second layer of said sintering powder to completely embed the mother mold and separated from the first layer by a demolding agent, completely embedding said pattern in complementary spaced relation in one of said layers of sintering powder so that both ends of said pattern contact with the inside of a wall of said frame, heating said sintering powder, mother mold and pattern to a sintering temperature to sinter said powder and to infiltrate said infiltratable metal of said pattern into said powder, and cooling so as to obtain a hardened, sintered mold separable into two parts along the boundary of said first and second layers and having an internal channel whose configuration complements that of said pattern and the mold cavity.

4. A method for producing a die or mold from sintered powder material according to claim 1, wherein said pattern is embedded in said first layer of sintering powder and a second and similar pattern is embedded in said second layer of sintering powder prior to said heating step to sintering temperature.

B 327,363

MIGRATION IMAGING MEMBER AND METHOD

Lloyd F. Bean, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 29, 1973, Ser. No. 327,363
Int. Cl. G03g 5/00, 13/00
U.S. Cl. 96—1.5 66 Claims
Group Art Unit 166

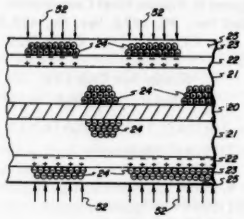
References Cited

UNITED STATES PATENTS

3,111,422	11/1963	Newman et al.	96/1 PS X
3,450,831	6/1969	Gaynor	96/1 PS X
3,515,549	6/1970	Bixby	96/1 PS X
3,656,990	4/1972	Goffe	96/1 PS X
3,707,391	12/1972	Goffe	96/1 PS X
3,723,112	3/1973	Luebbe	96/1.5 X
3,741,762	6/1973	Luebbe et al.	96/1.5
3,753,706	8/1973	Sankus et al.	96/1 PS
3,801,314	4/1974	Goffe	96/1 PS

FOREIGN PATENTS OR APPLICATIONS

1,235,894	6/1971	Great Britain	96/1 PS



1. A method of preparing circuit components comprising;

a. providing a member comprising a softenable dielectric layer and a migration layer, said migration layer comprising electrically conductive migration material and substantially electrically insulating softenable material, said softenable dielectric layer and electrically insulating softenable material capable of becoming softened upon exposure to a softening agent, sufficiently to allow migration of migration material in depth in said softenable dielectric layer and electrically insulating softenable material; said migration layer residing on said softenable dielectric layer;

b. applying a migration force to said migration material by selectively creating a charge pattern without optical ex-

posure in said migration layer in at least one circuit component configuration;

c. softening the softenable dielectric layer and electrically insulating softenable material at least sufficient to allow imagewise migration of at least one portion of electrically conductive migration material from said migration layer at least in depth into said softenable dielectric layer, with at least one portion of electrically conductive migration material remaining in said softenable migration layer, at least one of said migrating and remaining portions of conductive migration material being in said circuit component configuration; and,

d. removing the electrically insulating softenable material from the migration layer so that said remaining portion of electrically conductive migration material remains atop said softenable dielectric layer.

29. A circuit member, comprising:

a. a softenable dielectric layer;

b. electrically conductive migration material within said softenable dielectric layer forming at least one electrically conductive circuit component; and

c. a dielectric substrate upon which said softenable dielectric layer resides, said dielectric substrate being provided on its free surface with a discontinuous conductive coating comprising discrete portions, at least one of which discrete portions sandwiches the dielectric substrate between said at least one discrete portion and said at least one electrically conductive circuit component.

B 337,787

PHOTOELECTRIC AND ELECTROPHOTOGRAPHIC PIGMENTS COMPRISING DERIVATIVES OF CONDENSED POLYCYCLIC AROMATIC HYDROCARBON ALDEHYDES

John Alf Bergfjord, Macedon; Steven James Grammatica, Webster, and Richard William Radler, Marion, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 5, 1973, Ser. No. 337,787

Int. Cl. G03g *5/10, 7/00, 9/04*

U.S. Cl. 96—1.5 **7 Claims**

Group Art Unit 166
References Cited

UNITED STATES PATENTS

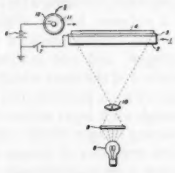
2,851,495	9/1958	Jensch et al.	260/566 B
3,246,983	4/1966	Sur et al.	96/1.5
3,414,650	12/1968	Catine et al.	260/566 B
3,510,419	5/1979	Cerrena et al.	96/1 PE
3,546,085	12/1970	Weinberges et al.	96/1.3

FOREIGN PATENTS OR APPLICATIONS

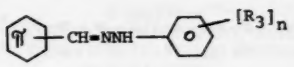
930,988	7/1963	Great Britain	96/1.5
980,511	1/1965	Great Britain	96/1.5

OTHER PUBLICATIONS

Weizmann et al., Jour. of Am. Chem. Soc., Vol. 70 (1948), pages 2829–2830.



1. An electrophoretic imaging suspension comprising a electrically insulating liquid carrier medium having dispersed therein an electrically photosensitive pigment composition comprising a mixture of pigments, at least a first of said pigments selected from the group consisting of cyan, magneta, or mixtures thereof, and another of said pigments comprising a pigment having the formula:



wherein:

represents a condensed polycyclic aromatic group having from about 14 to about 20 carbon atoms:

R_3 is selected from the group consisting of: H, OH, CH_3, OCH_3, C_2H_5, OC_2H_5, $COCH_3$, CO_2CH_3, COC_2H_5, $CO_2C_2H_5$, NO_2, CN, SO_2NH_2, $SO_2NHC_6H_5$, Cl, F, Br, I; and

n is a positive integer from 1–3.

B 342,886

SENSITIZED ELECTROPHOTOGRAPHIC LAYERS

Hans Ohlschlager, Cologne; Oskar Riester, Leverkusen both of Germany; Theofiel Hubert Ghys, Kontich; Karel Eugeen Verhille, Hoboken, and Johannes Josephus Vanheertum, Halle-Zand-Hoven, all of Belgium, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 19, 1973, Ser. No. 342,886

Claims priority, application Germany, Mar. 23, 1972, 2214054

Int. Cl. G03g *5/04, 5/06*

U.S. Cl. 96—1.6 **1 Claim**

Group Art Unit 166
References Cited

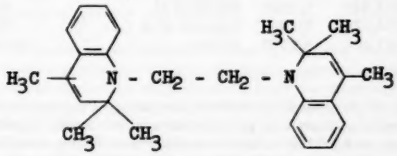
UNITED STATES PATENTS

2,743,272	4/1956	Knott	96/132
3,047,384	7/1962	Jones et al.	96/1.7
3,288,610	11/1966	Gotze et al.	96/1.7 X
3,438,774	4/1969	Depoorter et al.	96/1.7
3,455,684	7/1969	Depoorter et al.	96/1.7
3,468,661	9/1969	Cibeer et al.	96/1.7
3,476,558	11/1969	Depoorter et al.	96/1.7
3,574,629	4/1971	Jenkins	96/130
3,622,316	11/1971	Bird et al.	96/1.7
3,623,883	11/1971	Bannert et al.	96/1.7 X
3,630,749	12/1971	Webster et al.	96/1.7 X
3,743,638	7/1973	Webster et al.	96/1.7 X

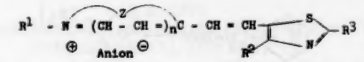
FOREIGN PATENTS OR APPLICATIONS

1,103,334	2/1968	Great Britain	96/132

1. An electrophotographic recording material having a layer support and at least one sensitized photoconductive layer containing a photoconductor and a sensitizing dye, wherein the improvement comprises embedded in a binder a photoconductor selected from the group consisting of zinc oxide, 1-ethyl-3-phenyl-7-diethylamino-2-(1H)-quinoline, the photoconductor compound of the following formula:

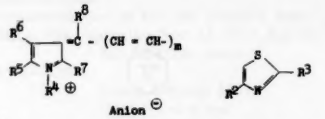


and in the photoconductor a sensitizing dye compound of one of the following formulae:



I

and



II

in which

R^1 is a saturated or unsaturated aliphatic group having up to six carbon atoms and which may be substituted, a cyclohexyl or a phenyl group;

R^2, R^4 and R^8 is a hydrogen atom or a saturated or unsaturated aliphatic group having up to six carbon atoms or a phenyl group;

R^3 is an $-SR^9$ or $NR^{10}R^{11}$ group;

R^5, R^6 is a hydrogen atom a saturated or unsaturated aliphatic group having up to three carbon atoms, or R^5 and R^6 together represent the ring members required to complete a condensed benzene or naphthalene ring;

R^7 is a hydrogen atom, a saturated or unsaturated aliphatic group having up to three carbon atoms or a phenyl group; R^9, R^{10} and R^{11} is a saturated or unsaturated aliphatic group containing up to six carbon atoms; or R and R together denote a radical required to complete a heterocyclic ring selected from the group consisting of pyrrolidone, piperidine, morpholine, thiomorpholine, indoline and tetrahydroquinoline rings;

n is 0 or 1;

m is 0 or 1;

Anion $^-$ is an anion selected from the group consisting of a halide, perchlorate, sulfate, methyl sulfate, p-toluenesulfonate, acetate and oxalate, this being absent in cases where R^1, R^4 or R^6 contains an acid group in the anionic form so that a betaine is present;

Z is a radical required to complete a heterocyclic group comprising a 5- or 6-membered heterocyclic ring of the type used in cyanine dyes.

B 351,673

PHOTOGRAPHIC DIFFUSION TRANSFER FILMS, PROCESSES AND COMPOSITIONS WITH COLOR MOIETY RELEASING COMPOUND

Lee J. Fleckenstein, and John Figueras, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 282,796, Aug. 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 176,751, Aug. 31, 1971, abandoned. This application Apr. 16, 1973, Ser. No. 351,673

Int. Cl. G03c *7/00, 5/54, 1/40, 1/10*

U.S. Cl. 96—3 **33 Claims**

Group Art Unit 166

References Cited

UNITED STATES PATENTS

2,543,338	2/1951	Schmidt et al.	96/56.6
3,245,789	4/1966	Rogers	96/3
3,255,001	6/1966	Blout et al.	96/3
3,443,940	5/1969	Bloom et al.	96/3
3,734,726	5/1973	Figueras et al.	96/3
3,751,406	8/1973	Bloom	96/29 D

1. A photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion layer, each said silver halide emulsion layer having associated therewith a nondiffusible p-sulfonamidoaniline or p-sulfoamidophenol having a color-providing moiety attached through the sulfonamido group.

B 283,124

IMAGE RECORDING PROCESS

John S. Berkes, Webster; William J. Hillegas, Fairport, and Samuel W. Ing, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 129,184, March 29, 1971, abandoned. This application Aug. 23, 1972, Ser. No. 283,124

Int. Cl. G03g *13/00*

U.S. Cl. 96—27 R **13 Claims**

Group Art Unit 166

References Cited

OTHER PUBLICATIONS

C. A., 1934, 28, 4315.

C. A., 1923, 17, 928.

C.A., 1922, 16, 2244.

British Journal of Photography, 4/49, p. 188.

1. A method of imaging which comprises exposing an amorphous layer of arsenic trisulfide to a pattern of light having wavelengths less than the bandgap radiation of said arsenic trisulfide, whereby the optical density of the amorphous layer is increased in the areas exposed to the light to form a visible image and heating the imaged layer to a temperature above that at which the image was formed to erase the image.

B 415,845

LIGHT SENSITIVE COMPOSITIONS AND PRODUCTS

Robert A. Heimsch, St. Louis, and Eric T. Reaville, Webster Groves, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 115,727, Feb. 16, 1971, Pat. No. 3,790,389, which is a continuation-in-part of Ser. No. 644,121, June 7, 1967, abandoned. This application Nov. 14, 1973, Ser. No. 415,845

Int. Cl. G03c *5/00*

U.S. Cl. 96—35.1 **8 Claims**

Group Art Unit 166

References Cited

UNITED STATES PATENTS

2,950,237	8/1960	Sharp	260/314
2,951,797	9/1960	Sharp	260/314
2,951,800	9/1960	Sharp	260/314
3,097,096	7/1963	Oster	204/159.23
3,216,825	11/1965	Caldwell	96/87
3,390,996	7/1968	MacLachlan	96/90

1. The process of passing a fluid through a layer in imagewise manner which comprises providing a layer having a latent image comprised of a polymer having aliphatic carbon-to-carbon double bonds and having oxidized portions having chemically bonded oxygen, and non-oxidized portions and applying a fluid to a surface of the layer which fluid selectively penetrates through one of such portions and permitting such fluid to penetrate through such layer selectively.

6. A method of obtaining images which comprises exposing imagewise to light in the presence of oxygen a layer comprising a photosensitizer and a photochemically oxidizable polymer having aliphatic carbon-to-carbon unsaturation, causing addition of oxygen to said polymer forming chemical bonds therewith in exposed areas while otherwise substantially retaining the structure of such polymer, thereby forming a latent image in said layer, and applying a fluid to the surface of the layer which fluid selectively penetrates imagewise through said layer to produce an image.

B 311,317
NAPHTHOLIC COUPLERS

Enzo Coraluppi; Elio De Saraca, both of Carcare, and Lorenzo Vittore, Ligure, all of Italy, assignors to Minnesota Mining and Manufacturing Company

Filed Dec. 1, 1972, Ser. No. 311,317
Claims priority, application Italy, Dec. 21, 1971, 54921/71
Int. Cl. G03c *7/00, 7/04, 1/40*
U.S. Cl. 96—56.1 **11 Claims**

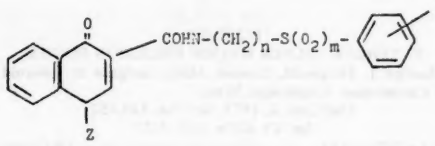
Group Art Unit 166

References Cited

UNITED STATES PATENTS

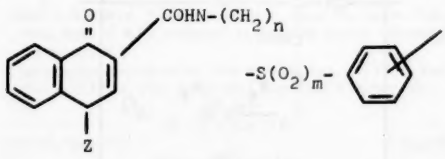
2,474,293	6/1949	Weissberger et al.	96/55
2,706,684	11/1952	Graham et al.	96/100
3,227,551	1/1966	Barr et al.	96/100
3,615,499	10/1971	Groet	96/56.6
3,667,956	6/1972	Iwama et al.	96/100

1. A silver halide photographic emulsion containing at least one coupler of the formula:



wherein R is hydrogen or an alkyl radical having 1–18 carbon atoms; Z is hydrogen or a substituent which is expelled during the coupling reaction with an oxidation product of a primary amine developer; *m* is 0 and 1; *n* is 1, 2, 3 and 4.

3. A p-phenylene diamine color developing bath containing at least one coupler of the formula:



wherein R is hydrogen or an alkyl radical having 1–18 carbon atoms; Z is hydrogen or a substituent which is expelled during the coupling reaction with an oxidation product of a primary amine developer; *m* is 0 and 1; and *n* is 1, 2, 3 and 4.

B 326,514
MULTI-LAYERED PHOTOSENSITIVE MATERIAL HAVING GLASS SUBSTRATE AND METHOD OF MANUFACTURE

Lambertus Postma, Emmasingel, Eindhoven, Netherlands

Filed Jan. 24, 1973, Ser. No. 326,514
Claims priority, application Netherlands, Feb. 2, 1972, 7201333
Int. Cl. G03c *1/80, 1/76*
U.S. Cl. 96—67 **2 Claims**

Group Art Unit 166

References Cited

UNITED STATES PATENTS

2,598,453	5/1952	Slifkin	96/75
2,831,780	4/1958	Deyrup	117/54
2,898,496	8/1959	Clark	117/54
3,352,707	11/1967	Pickard	117/124 E
3,352,708	11/1967	Lyon et al.	117/124 E
3,441,424	4/1969	Bolgiano	117/72
3,522,075	7/1970	Kiel	117/72
3,554,787	1/1971	Plymale	117/72
3,674,484	7/1972	Spinski	96/34
3,743,491	7/1973	Poole et al.	117/124 E
3,744,904	7/1973	Loprest et al.	96/36.2

FOREIGN PATENTS OR APPLICATIONS

1,001,007	8/1965	Great Britain	96/75

1. A method of manufacturing a photosensitive material comprising applying to a glass substrate a layer of less than 1 μm of a metal compound capable of pyrolysis to a transparent insoluble metal oxide, heating the resultant moistened glass substrate to a temperature of from about 180°C to 220°C to thereby form an insoluble transparent layer of metal oxide on said glass substrate, applying a layer of a cellulose ester to said layer of metal oxide, saponifying said layer of cellulose oxide to a depth of from 1 to 10 μ and then impregnating the resultant saponified layer with a solution of a photosensitive compound.

2. A photosensitive material produced by the method of claim **1.**

B 354,008
PHOTOGRAPHIC PRODUCTS CONTAINING ANTI-REFLECTION LAYER

Charles K. Chiklis, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1973, Ser. No. 354,008
Int. Cl. G03c *1/48*
U.S. Cl. 96—72 **53 Claims**

Group Art Unit 166

References Cited

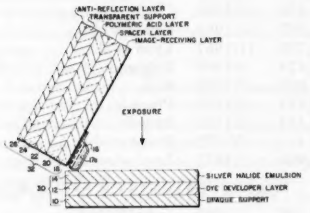
UNITED STATES PATENTS

2,331,716	10/1943	Nadeau et al.	96/87 R
2,376,428	5/1945	Hansell	96/84 R
2,430,479	11/1947	Pratt et al.	117/DIG. 7
2,698,242	12/1954	Saner	96/87 R
3,023,126	2/1962	Underwood et al.	117/76 F
3,198,692	8/1965	Bridgeford	117/76 F
3,617,354	11/1971	Carnahan	117/76 P
3,703,426	11/1972	Larson et al.	117/76 F

1. A photographic product for use in diffusion transfer processes comprising a transparent polyester support carrying on one side thereof an image-receiving layer, the other side of said transparent polyester support carrying an anti-reflection coating, said anti-reflection coating having an index of refraction less than said polyester support and comprising a quarter-wave stratum of a fluorinated polymer and an isocyanate in said stratum or between said stratum and said transparent polyester support, said isocyanate being present in a quantity

effective to increase the abrasion resistance of said fluorinated polymer stratum.

23. A photographic film product comprising a first support and a second support, at least one of said supports being a transparent polyester support, a photosensitive layer carried on one of said supports, and a rupturable container releasably holding a processing composition adapted, when distributed between predetermined layers carried by said supports, to develop said photosensitive layer and provide an image viewable through said transparent polyester support, the external surface of said transparent polyester support carrying an anti-reflection coating, said anti-reflection coating having an index of refraction less than said polyester support and comprising a quarter-wave stratum of a fluorinated polymer and an isocyanate in said stratum or between said stratum and said transparent polyester support, said isocyanate being present in a quantity effective to increase the abrasion resistance of said fluorinated polymer stratum.



B 319,226

MULTICOLOR SCREEN ELEMENT CONTAINING A HYDROPHILIC COLLOID TREATED WITH A BASIC DYE AND ZIRCONIUM ACETATE

Herbert L. Fielding, Wilmington, and Samuel H. Liggero, Wellesley, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 29, 1972, Ser. No. 319,226
Int. Cl. G03c *1/84;* **G03f** *5/00*
U.S. Cl. 96—76 R **6 Claims**
Group Art Unit 166

References Cited

UNITED STATES PATENTS

2,942,975	6/1960	Eerde	96/111
3,284,208	11/1966	Land	96/118
3,730,725	5/1973	Idelson	96/118

1. A photographic multicolor screen element which comprises, in combination, a geometrically repetitive plurality of chromatic filter element series; at least one of said chromatic filter element series comprising filter elements comprising a hydrophilic colloid dyed with an aqueous solution of a basic dye and zirconium acetate.

B 235,011

AZOTRIAZOLE AND AZOTETRAZOLE ANTIFOG, ANTISTAIN AND SELECTIVE DESENSITIZERS FOR SILVER HALIDE EMULSIONS

Agostino Baldassarri, Savona, and Luigi Cellone, Albissola Marina-Savona, both of Italy, assignors to Minnesota Mining and Manufacturing Company

Filed Mar. 15, 1972, Ser. No. 235,011
Claims priority, application Italy, Mar. 16, 1971, 49093/71
Int. Cl. G03c *1/34*
U.S. Cl. 96—109 **12 Claims**
Group Art Unit 166

References Cited

UNITED STATES PATENTS

2,453,087	11/1948	Dersch	96/66.5
2,588,538	3/1952	Kendall	96/66.5
3,563,747	2/1971	Willems	96/66
3,615,616	10/1971	Willems	96/66.5
3,719,604	3/1973	Prior	260/157

1. A silver halide photographic emulsion having contacted therewith at least a fog-inhibiting amount of an azotriazole or an azotetrazole.

B 320,452

SYNTHETIC SILVER HALIDE EMULSION BINDER

Maurice J. Fitzgerald, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

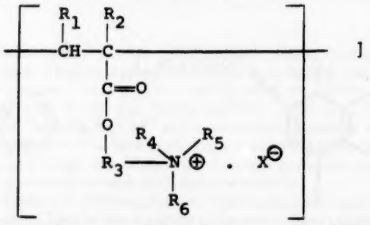
Filed Jan. 2, 1973, Ser. No. 320,452
Int. Cl. G03c *1/02, 1/72*
U.S. Cl. 96—114 **29 Claims**
Group Art Unit 166

References Cited

UNITED STATES PATENTS

2,839,401	6/1958	Gray et al.	96/114
3,411,912	11/1968	Dykstra et al.	96/114
3,647,464	3/1972	Smith et al.	96/114
3,681,079	8/1972	Fitzgerald	96/114
3,709,690	1/1973	Cohen et al.	96/114
3,713,834	1/1973	Fitzgerald	96/114
3,746,548	7/1973	Fitzgerald	96/114
3,749,577	7/1973	Hollister et al.	96/114

1. A photosensitive silver halide emulsion wherein the emulsion binder consists essentially of a water-soluble film-forming copolymer of a first monomer of the formula:



wherein R_1 is hydrogen, a lower alkyl group or a halogen; R_2 is hydrogen, a lower alkyl group, halogen or cyano group; R_3 is a lower alkylene or lower cycloalkylene group and R_4, R_5 and R_6 each is a lower alkyl, or lower cycloalkyl group; or R_3 and/or R_4 and/or R_5 and/or R_6 taken together represent the atoms necessary to complete a 3 to 8-membered heterocyclic ring structure; and X is a salt-forming anion; and

a second monomer which is an acrylamide.

B 392,242

PHOTOCURABLE COMPOSITIONS

Helmut Barzynski, 49, An der Ameisenhalde, 6702; Matthias Mark, 49, Seebacher Strasse, 6702, both of Bad Duerkheim; Gerhard Storck, 53 Maxdorfer Straesse, 6701, Ruchheim, and Dietrich Saenger, 51 Bruesseler Ring, 6700, Ludwigshafen, all of Germany

Filed Aug. 28, 1973, Ser. No. 392,242

Int. Cl. G03c 1/70

U.S. Cl. 96—115 R **12 Claims**

Group Art Unit 166

References Cited

UNITED STATES PATENTS

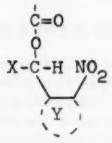
3,615,629	10/1971	Wilhelm et al.	96/115 R

OTHER PUBLICATIONS

Patchornik, J. A. et al., J. Amer. Chem. Soc., 92, 6333, 1970.

1. A composition curable under the action of light which consists of:

A. at least one substance containing at least two aromatic or heteroaromatic o-nitrocarbinol ester groups of the general formula:



in which Y is an aromatic or pyridine ring system of five to 14 ring members and X is hydrogen or alkyl of one to eight carbon atoms or an aryl or aralkyl of up to 12 carbon atoms; and

B. at least one compound with at least two aziridine groups or isocyanate groups in the molecule.

9. A process for the production of moldings, impregnations, bonds, coatings, printing inks and printing plates which comprises exposing to light of a wavelength of from 200 to 500 nm a composition as claimed in claim **1**.

11. A molding, impregnation, bond, coating, printing ink or printing plate prepared using a photocurable composition as claimed in claim **1**.

B 360,719

SILVER HALIDE PHOTOGRAPHIC MATERIALS CONTAINING A HIGH WEIGHT RATIO OF GOLD TO SULFUR SENSITIZERS AND A SENSITIZING METHINE DYE

Allan G. Millikan, Webster, and Mary Jane W. Brizee, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 63,606, Aug. 13, 1970, Pat. No. 3,753,721. This application May 16, 1973, Ser. No. 360,719

Int. Cl. G03c 1/10

U.S. Cl. 96—123 **9 Claims**

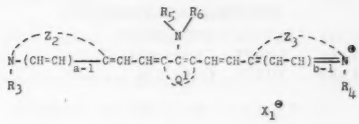
Group Art Unit 166

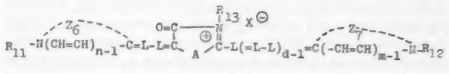
References Cited

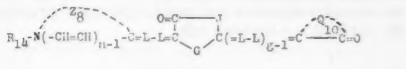
UNITED STATES PATENTS

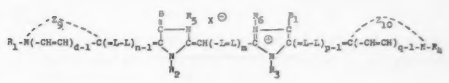
3,558,614	1/1971	Jenkins	96/127
3,565,630	2/1971	Millikan et al.	96/123
3,695,888	10/1972	Hiller et al.	96/127
3,736,141	5/1973	Overman et al.	96/108
3,743,510	7/1973	Nakazawa et al.	96/127
3,753,721	8/1973	Millikan et al.	96/127

1. A photographic silver halide emulsion comprising light-sensitive silver halide grains having an average grain size up to about .2 micron; said silver halide grains being sensitized with the combination of a gold sensitizer, at a concentration of about 50 to 200 milligrams gold per mole of silver, and a sulfur sensitizer at a weight ratio of sulfur to gold of from 1:15 to 1:75; and, said silver halide being spectrally sensitized with a dye having one of the following formulas:









wherein *a*, *b*, *d* and *g*, each represents an integer of 1 or 2; *n*, *m* and *p* each represent an integer of 1 to 3; X^- represents an acid anion; R_3, R_4, R_{11}, R_{12}, R_{14}, R_{15}, R_{16}, R_{17}, R_{18}, R_{19} and R_{20} each represents a member selected from the group consisting of an alkyl group and an aryl group; R_5 and R_6, taken separately, each represents a member selected from the group consisting of alkyl, aryl and allyl, and taken together, R_5 and R_6 represent the atoms required to complete a heterocyclic ring selected from the group consisting of a morpholino group, a thiomorpholino group, a piperidino group, a piperazinyl group, a 4-aryl-1-piperazinyl group, a pyrrolidinyl group, an indolinyl group, a tetrahydroquinoyl group and a decahydroquinoyl group; R_{13} represents a member selected from the group consisting of an alkyl group, an alkenyl group and an aryl group; Q^1 represents an ethylene linkage; L represents a methine linkage; A, J and G each represents a member selected from the group consisting of oxygen, sulfur, selenium and the group $=N-R_{13}$ where R_{13} is as defined above; B and B_1 each represents an atom selected from the group consisting of oxygen, sulfur and selenium; Q_{10} represents the non-metallic atoms necessary to complete a heterocyclic nucleus selected from the group consisting of a 2-thiazolin-4-one nucleus, a 2-thioxo-4-imidazolidone nucleus, a 2-pyrazolin-5-one nucleus, a 2-thioxo-4,6-pyrimidinedione nucleus and a 2-thioxo-4-thiazolidinone nucleus; and Z_2, Z_3, Z_6, Z_7, Z_9 and Z_{10} each represent a heterocyclic nucleus selected from the group consisting of a thiazole nucleus, a benzothiazole nucleus, a naphthothiazole nucleus, a a thianaphtheno-7′,6′,4,5-thiazole nucleus, an oxazole nucleus, a benzoxazole nucleus, a naphthoxazole nucleus, a selenazole nucleus, a benzoselenazole nucleus, a naphthoselenazole nucleus, a thiazoline nucleus, a pyridine nucleus, a quinoline nucleus, an isoquinoline nucleus, a 3,3-dialkylindolenine nucleus, an imidazole nucleus, a benzimidazole nucleus and a naphthimidazole nucleus.

B 415,113
STABILIZED AUTOCATALYTIC METAL DEPOSITION BATHS

Nathan Feldstein, Kendadl Park, and Joel Alan Weiner, Cranbury, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Nov. 12, 1973, Ser. No. 415,113
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 **5 Claims**
Group Art Unit 145

References Cited

UNITED STATES PATENTS

3,532,518	10/1970	D'Ottavio	106/1
3,661,596	5/1972	Clauss et al.	106/1
3,717,482	2/1973	Gulla et al.	106/1

1. In an electroless plating bath comprising a metal salt selected from the group consisting of salts of copper, cobalt, nickel and palladium, a reducing agent for said salt, a chelating agent and a pH adjusting agent, the improvement which comprises adding a stabilizer which consists essentially of an amount of an alkali metal stannate, silicate or vanadate salt in an amount sufficient to inhibit spontaneous decomposition of said bath without unduly slowing down the plating rate, with the provision that when said metal salt is nickel or palladium, the stabilizer is a vanadate salt.

B 366,402
METHOD OF IMPROVING THE GRADE OF PHOSPHORIC ACID BY-PRODUCT GYPSUM TO BE USED AS AN INHIBITOR FOR CEMENT SETTING AND ITS APPARATUS

Yoshiharu Fukuda, Tokyo; Toshio Onishi, Koshigaya, and Akitoshi Takeuchi, Yokohama, all of Japan, assignors to Onoda Cement Company, Ltd., Onoda-shi, Yamaguchi-ken, Japan

Filed June 4, 1973, Ser. No. 366,402
Int. Cl. C04b *11/00*
U.S. Cl. 106—109 **1 Claim**
Group Art Unit 116

References Cited

UNITED STATES PATENTS

3,047,447	7/1962	Stasse	106/109
3,159,497	12/1964	Yamaguchi	106/109
3,199,997	8/1965	Johnson	106/109
3,445,323	5/1969	Schnabel	106/109
3,489,583	1/1970	Bloom et al.	106/109
3,547,581	12/1970	Gauster et al.	106/109

1. Method of improving the grade of phosphoric acid by-product gypsum to be used as an inhibitor for cement setting comprising:

A. Dispersing lime stone powder in hot gas stream to calcine it into quick lime,

B. Dispersing phosphoric acid by-product gypsum powder in hot gas containing said quick lime to calcine it into half hydrated or soluble anhydrous gypsum,

C. Separating calcined quick lime and gypsum from gas and then subjecting said calcined product to hydration.

B 286,499
HIGH INDEX OPTICAL GLASS

James Matthew Wylot, and Edgar Joseph Greco, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,499
Int. Cl. C03c *3/12*
U.S. Cl. 106—47 Q **1 Claim**
Group Art Unit 115

References Cited

UNITED STATES PATENTS

1,607,817	11/1926	Dennis	106/47 R
2,673,809	3/1954	Weissenberg et al.	106/47 R

FOREIGN PATENTS OR APPLICATIONS

736,073	8/1955	Great Britain	106/47 Q

OTHER PUBLICATIONS

Dennis et al., "Germanium Glasses," J. Soc. Glass Tech 9, p. 184, (1925).

1. Optical glass having an index of refraction of approximately 1.912 and an Abbe number of approximately 19.6 and consisting of components having the following weight percents:

Component	Weight Percent
Lead Oxide (PbO)	64.7
Tellurium dioxide (TeO_2)	9.7
Germanium dioxide (GeO_2)	7.6
Sodium Oxide (Na_2O)	5
Silicon dioxide (SiO_2)	13.

B 303,702
USEFUL WAX COMPOSITIONS

Robert B. Hutchison, Cincinnati, Ohio, assignor to Emery Industries, Inc., Cincinnati, Ohio

Division of Ser. No. 174,252, Aug. 23, 1971, Pat. No. 3,745,033. This application Nov. 6, 1972, Ser. No. 303,702
Int. Cl. C08h *9/06*
U.S. Cl. 106—268 **3 Claims**
Group Art Unit 145

References Cited

UNITED STATES PATENTS

2,385,849	10/1945	Snell	106/270
2,523,848	9/1950	Schaerer	106/270
3,257,329	6/1966	Motiuk	106/270

1. An aqueous emulsion containing about 20 to 60 percent by weight oil and 2 to 20 percent by weight of a wax composition comprising about 45 to 70 percent by weight, based on the wax composition, of (a) an α-alkyl branched monocarboxylic acid or mixture thereof, said acids containing from about 20 to about 60 carbon atoms with the alkyl group containing from about one to 16 atoms;

about 15 to 40 percent by weight (b) mixed glycerides of saturated mono- and dicarboxylic acids selected from the group consisting of Japan wax and compositions obtained by the reaction of 1 to 4 mols monocarboxylic acid containing 14 to 20 carbon atoms, 0.25 to 1.5 mols short-chain dicarboxylic acid containing six to 12 carbon atoms and 1 mol glycerine; and

about 5 to 25 percent by weight of (c) microcrystalline petroleum wax melting between 180° and 200°F.

B 324,879

PRIMROSE CHROME YELLOW PIGMENT AND PROCESS FOR ITS PREPARATION

Julius Jackson, Westfield, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 18, 1973, Ser. No. 324,879

Int. Cl. C09c *1/14*

U.S. Cl. 106—298 **4 Claims**

Group Art Unit 116

References Cited

UNITED STATES PATENTS

2,023,928	12/1935	Lederle et al.	106/298
2,212,917	8/1940	Horning	106/298
2,808,339	10/1957	Jackson	106/298
3,370,971	2/1968	Linton	106/298

OTHER PUBLICATIONS

"Color Index," 2nd edition, 1956, published by the Society of Dyers and Colourists, England, and the American Association of Textile Chemists and Colorists, United States.

1. A process for the production of a primrose yellow shade pigment consisting essentially of 0.5 to 10 weight percent of one or more hydrous oxides selected from the group consisting of alumina, titania and zirconia, and 90 to 99.5 weight percent of an orthrhombic phase lead chromate-lead sulfate solid solution consisting essentially of 40 to 85 weight percent of lead chromate and 15 to 60 weight percent of lead sulfate, said solid solution containing no more than about 0.35 weight percent of CO_2, calculated as $PbCO_3$ by:

a. admixing a first aqueous solution containing a soluble lead salt and having a pH of 3.8 to 4.2 with a second aqueous solution having a pH of 6.5 to 7 and containing chromate and sulfate ions, the admixing being conducted in the presence of a combination of acetic acid, Al^{+3} ions, and $P_2O_7^{-4}$ ions to precipitate the solid solution as a stable orthorhombic crystal phase, the composition of the two solutions being selected to produce the solid solution composition in the form of a slurry having a pH of 1.4 to 2,

b. adjusting the pH of the aqueous slurry thus formed to 4 to 6 and maintaining it at an elevated temperature of 40° to 80°C. for at least 5 minutes,

c. thereafter surface-coating the precipitate with 0.5 to 10 percent, based on the final pigment weight of at least one hydrous oxide selected from the group consisting of alumina, titania and zirconia to further enhance lightfastness, and

d. filtering the surface-coated precipitate, washing it free of residual ions, drying it and then heating the pigment for a minimum of 15 minutes to a temperature of at least 110°C. to maximize lightfastness.

2. A chrome yellow pigment of the primrose type having excellent color intensity and improved thermal stability characteristics, said pigment consisting essentially of 0.5 to 10 weight percent of one or more hydrous oxides, selected from the group consisting of alumina, titania and zirconia, and 90 to 95.5 weight percent of an orthorhombic phase lead chromate-lead sulfate solid solution consisting essentially of 40 to 85 weight percent of lead chromate and 15 to 60 weight percent of lead sulfate, said solid solution containing no more than about 0.35 weight percent of CO_2, calculated as $PbCO_3$.

B 380,926

FREE FLOWING DISPERSIBLE INORGANIC PIGMENT OF FILLER COMPOSITIONS CONTAINING HYDROXYALKYLATE ALKYLENE DIAMINES

August Bockmann; Gunter Teichmann, both of Krefeld, and Hans Rudolph, Krefeld-Bockum, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 19, 1973, Ser. No. 380,926

Claims priority, application Germany, Aug. 1, 1972, 2237791

Int. Cl. C08h *17/04*; C09c *3/02*

U.S. Cl. 106—308 N **5 Claims**

Group Art Unit 116

References Cited

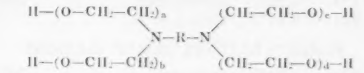
UNITED STATES PATENTS

3,298,849	1/1967	Dohman et al.	106/308 N

FOREIGN PATENTS OR APPLICATIONS

1,295,383	5/1962	France	106/307
1,080,115	8/1967	Great Britain	106/308 N

1. A free-flowing, dispersible composition comprising an inorganic pigment or filler selected from the group consisting of titanium dioxide, zinc oxide, zinc sulfide, iron oxide, chromium oxide, cadmium chalcogenide, aluminum oxide, mica, kaolin, calcium carbonate, talcum, silicon dioxide and dolomite and about 0.1 to 3% by weight of the pigment or filler of a hydroxyalkylated alkylene diamine of the formula



(I)

in which

R is an alkylene radical of about two to 15 carbon atoms, *a*, *b*, *c* and *d* are integers from 1 to about 22 and the sum of *a*, *b*, *c* and *d* is about 5 to 25.

B 322,621

METHOD OF PROVIDING AND DEVELOPING HIDDEN ENTRIES

Robert D. Fraik, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 23,036, March 26, 1970, Pat. No. 3,725,104, which is a continuation-in-part of Ser. No. 822,287, May 6, 1969, abandoned. This application Jan. 11, 1973, Ser. No. 322,621

Int. Cl. B41m *5/12*, *5/18*

U.S. Cl. 117—107 **9 Claims**

Group Art Unit 162

References Cited

UNITED STATES PATENTS

2,168,098	8/1939	Groak	117/36.2
2,755,201	7/1956	Webber et al.	117/36
2,949,381	8/1960	Steinhardt	117/36
3,076,406	2/1963	Florence	101/469
3,170,395	2/1965	Gundlach et al.	101/469
3,262,386	7/1966	Gordon	101/469
3,363,338	1/1968	Skinner et al.	35/36
3,363,556	1/1968	Shely et al.	101/469
3,386,379	6/1968	Gundlach et al.	101/469
3,451,143	6/1969	Thomas et al.	101/469
3,476,578	11/1969	Brinckman	117/36.2
3,481,760	12/1969	Clark et al.	117/36.2
3,617,324	11/1971	Thomas	117/1.7
3,632,364	1/1972	Thomas et al.	117/1.7
3,672,842	6/1972	Florin	23/253 TP
3,725,104	4/1973	Friak	117/1.7

4. A method of developing a latent image to provide feedback in a paper-based feedback system, said latent image comprising an image-forming reactant material selected from the group consisting of dithiooxamide, the N,N'-disubstituted derivatives of dithiooxamide, and an iron-complexing com-

pound capable of forming a colored complex when reacted with the ions of an iron salt, said iron-complexing compound having a benzene ring and at least two hydroxyl groups substituted in adjacent positions on said ring, said method comprising contacting said latent image with a sheet-like means for dispensing an image-forming coreactant to transfer said image-forming coreactant from said sheet-like means to said latent image and to react and render said latent image visible.

B 259,274
PRINTING FIBROUS MATERIAL

Karl Dachs, 33 Knietschstrasse, 6710 Frankenthal; Gerhard Faulhaber, 34 Friedrichring, 6800 Mannheim; Rolf Fikentscher, 27 Von-Stephan-strasse, 6700 Ludwigshafen; Knut Oppenlaender, 23 Otto-Dill-strasse, 6700 Ludwigshafen, and Joachim Schulze, 50 Sternstrasse, 6700 Ludwigshafen, all of Germany

Filed June 2, 1972, Ser. No. 259,274
Int. Cl. D06p *1/00*
U.S. Cl. 117—15 **5 Claims**
Group Art Unit 162

References Cited

UNITED STATES PATENTS

2,696,168	12/1954	Costello	117/15 X
3,138,567	6/1964	Abrams et al.	117/38 X
3,140,194	7/1964	Gagliardi	117/15
3,162,611	12/1964	Varron et al.	117/38 X
3,657,175	4/1972	Zimmerman	260/29.6
3,694,241	9/1972	Guthrie et al.	117/15

FOREIGN PATENTS OR APPLICATIONS

1,121,814	1/1962	Germany	260/29.6

OTHER PUBLICATIONS

Chemical Abstracts, Vol. 72, 1970, sec. 67632n, p. 30.

1. In a process for printing fibrous material wherein a print paste consisting essentially of an oil-in-water emulsion of a pigment, a thickening agent, a pigment binder and emulsifier of the oxyalkylated phenol derivative type is applied to said fibrous material, the improvement which comprises the use as said emulsifier from 0.1 to 1.5% by weight based on the finished print paste of di-(α-phenylethyl)-phenol which has been oxyethylated from 12 to 16 times.

B 277,449
ROADSTONE

John William Carson, North Rigton, England, assignor to Albright & Wilson Limited, Oldbury, near Birmingham, England

Filed Aug. 2, 1972, Ser. No. 277,449
Claims priority, application Great Britain, Aug. 4, 1971, 36551/71; Apr. 20, 1972, 18318/72
Int. Cl. B44d *1/094*
U.S. Cl. 117—21 **10 Claims**
Group Art Unit 162

References Cited

UNITED STATES PATENTS

303,568	8/1864	Gould	106/286
1,169,506	1/1916	Osgood	252/1
2,010,620	8/1935	Wright	117/100 D
2,298,277	10/1942	Burton	117/23
2,703,445	3/1955	Veale	117/21
2,974,060	3/1961	Dettling	117/23 X
3,023,492	3/1962	Bristow	117/23 X
3,079,243	2/1963	Ueltz	117/100 B X
3,620,799	11/1971	Hoelscher	117/22

FOREIGN PATENTS OR APPLICATIONS

1,471,415	11/1968	Germany	117/22

1. A roadstone consisting essentially of:

a. a granular substrate having a particle size of at least 1mm of refractory metamorphic and igneous rocks, slags, shales, pit residues, concrete, devitrified soda glass, coarse crushed refractory brick, chrome ore, iron ore, bauxite or ceramics; and

b. from 1 to 50 percent by weight of the total stone of a sintered coating upon the said substrate, said coating consisting essentially of hard particles having a diameter of less than 1mm of spinels, bauxite or finely crushed refractory brick.

8. A roadstone having an overall size of from 2 to 25mm and consisting essentially of granite coated on the surface thereof with from 1 to 50% by weight of the total stone of a sintered coating of particles of chrome residue having a diameter of from 10 to 70 microns.

9. A method for the production of roadstone which comprises mixing together a granular substrate having a particle size of at least 1mm of refractory metamorphic and igneous rocks, slags, shales, pit residues, concrete devitrified soda glass, coarse crushed refractory brick, chrome ore, iron ore, bauxite or ceramics with from 1 to 50% by weight of a coating composition consisting essentially of hard particles having a particle size of between 5 and 300 microns of spinels, bauxite or finely crushed refractory brick, and heating the mixture to a sintering temperature between 1,000°C and 1,600°C.

B 422,399
METHOD OF DEVELOPING ELECTROSTATIC LATENT IMAGES WITH PRESSURE SENSITIVE TONER

Stephen Strella, Pittsford, and Meurig W. Williams, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 214,441, Dec. 30, 1971, Pat. No. 3,804,764. This application Dec. 6, 1973, Ser. No. 422,399
Int. Cl. C23c *3/00*; **G03g**
U.S. Cl. 117—21 **10 Claims**
Group Art Unit 166

References Cited

UNITED STATES PATENTS

3,788,994	1/1974	Wellmen et al.	96/1 SD

FOREIGN PATENTS OR APPLICATIONS

1,036,279	8/1958	Germany	96/1.4

OTHER PUBLICATIONS

T879,009–Staudenmayer, et al., 4/23/70.

1. A process for producing a final toner image comprising: fixing a toner in image configuration to a support by the application of pressure, said toner comprising a finely divided colored resin, said resin comprising an amorphous weakly crosslinked polymer having a bond strength from about 2 to about 30 kcal/mole and a Tg of greater than about −20° C.

B 278,991
METHOD OF CONTROLLING SOLAR HEAT AND LIGHT IN GREEN HOUSES

Richard Delano, Box 96, and Chad J. Raseman, 15 Blueberry Ridge Rd., both of Setauket, N.Y. 11733

Filed Aug. 9, 1972, Ser. No. 278,991
Int. Cl. B44d *5/06*; **G02b** *13/14*; **A01g** *9/22*
U.S. Cl. 117—333 **11 Claims**
Group Art Unit 162

References Cited

UNITED STATES PATENTS

1,786,205	12/1930	Grerder	47/117 UX
2,744,830	5/1956	Manske	106/84
3,224,901	12/1965	Tercher	117/138.8 E
3,598,640	8/1971	Bennett	117/124 E
3,652,379	3/1972	White et al.	117/138.8 R
3,679,451	7/1972	Marks et al.	117/33.3

OTHER PUBLICATIONS

CPI Abstract 30608T–A, June 30, 1972, Derwent Publications.

1. A method of controlling the amount of solar heat and light which enters a glass or plastic covered greenhouse or

similar enclosure comprising the steps of coating a liquid on the glass or plastic film of the greenhouse, the liquid including a carrier, a finely divided synthetic silica whose average particle size is in the micron range and is less than 10 microns, and a transparent film forming plastic resin, permitting the liquid to dry thereby forming an adherent dry non-transparent coating on the glass or plastic film, and including the further subsequent step of repeatedly permitting the wetting of the said dry non-transparent coating on the glass or plastic surface of said greenhouse with water to make the coating transparent and permitting it to dry between each wetting to make the coating non-transparent.

B 327,899

X-RAY IMAGE INTENSIFIER PHOSPHOR

Arthur P. D. Silva, and Velmer A. Fassel, both of Ames, Iowa, assignors to The United States of America, as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 30, 1973, Ser. No. 327,899
Int. Cl. C09k *1/36, 1/54, 1/66*
U.S. Cl. 117—33.5 R **1 Claim**
Group Art Unit 162

References Cited

UNITED STATES PATENTS

2,968,725	1/1961	Ter-Pogossian	117/335 R
3,487,884	12/1969	Palilla et al.	252/301.4 P
3,527,710	9/1970	Toma et al.	252/301.4 P
3,542,690	11/1970	Borchardt	252/301.4 P
3,582,493	6/1971	Haynes et al.	252/301.4 R

1. An X-ray intensifier screen including a base transparent to X-ray but opaque to ultraviolet-visible light; an X-ray excitable phosphor disposed upon said base, said X-ray excitable phosphor emitting ultraviolet-visible light, said phosphor having the formula $Y_{1-x}Gd_xPO_4{:}Tb^{+3}$ where $x = 0.3$ to 0.1 and the terbium concentration is between about 0.008 and 0.012 mole per mole of phosphate, and a binder for retaining said X-ray excitable phosphor upon said base.

B 198,810

METHOD OF COATING A SPLICED WEB

William F. Fowble, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,810
Int. Cl. B05c *3/12*; **B44d** *1/12*; **G03c** *1/74*
U.S. Cl. 117—34 **12 Claims**
Group Art Unit 162

References Cited

UNITED STATES PATENTS

2,681,294	6/1954	Beguin	117/34
2,761,418	9/1956	Russell	118/410
2,761,791	9/1956	Russell	118/410
2,952,559	9/1960	Nadeau	117/34
3,206,323	9/1965	Miller	117/34
3,227,136	1/1966	Bartlett	118/63
3,348,964	10/1967	Good	118/50
3,502,494	3/1970	Ishiwata	118/50
3,503,370	3/1970	Ishiwata	117/34
3,518,141	6/1970	Boarns et al.	117/34
3,640,752	2/1972	Ishiwata	117/34
3,645,773	2/1972	Herzhoff et al.	117/34
3,663,292	5/1972	Herzhoff et al.	117/34

1. A method of coating a spliced strip material from a coating device which comprises

moving the strip material adjacent and relative to the coating device;

discharging a ribbon of liquid coating composition from the coating device toward said strip of material to form and maintain a bead of liquid composition transversely of an area of the moving strip across which the web moves and picks up a layer of said liquid composition;

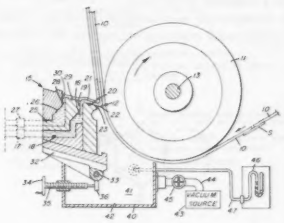
subjecting the bead of liquid coating composition to an initial differential air pressure to hold the bead of coating composition from movement in the direction of travel of the strip material, the pressures being selected to retain the bead of coating composition in a coating position and to maintain a uniform coating on the strip material, the lesser air pressure being on the side of the bead toward which the web approaches;

increasing the initial differential air pressure just before a splice in the strip material reaches said bead;

maintaining the increased differential air pressure until the splice in the strip material has passed through said bead; and

decreasing the differential air pressure to the initial differential air pressure after the splice in the strip material has passed through said bead.

9. In a method of coating a moving web of substantially nonporous flexible material containing at least one splice whose thickness is substantially greater than the thickness of the web of material with a liquid coating composition having viscosities of between 3 and 35 centipoises, comprising flowing a thin layer of said composition from a coating device to



the web of nonporous material to form a bead of composition therebetween extending transversely of the web, said bead having a depth several times the thickness of said web while passing from the coating device to the web and while the web moves toward the coating device and away from the coating device, maintaining the bead of coating composition in a coating condition by applying an initial predetermined differential in gaseous pressures on the two sides of the bead of coating composition, the pressure on that side of the bead from which the web approaches the coating device being less than the pressure on that side of the bead from which the web moves away from the coating device, the improvement which comprises,

increasing the initial pressure differential a predetermined increment a predetermined time interval before a splice in the web reaches the bead of coating composition;

maintaining the increased pressure differential until the splice in the web has passed through said bead of coating composition; and

decreasing the pressure differential to the initial pressure differential after the splice in the web has passed through said bead of coating composition.

B 335,670
HEAT-SENSITIVE RECORDING MATERIALS

Albert Lucien Poot; Frans Clement Heugebaert, both of Kontich; Wilhelmus Janssens, Aarschot, and Antoon Leon Vandenberghe, Hove, all of Belgium, assignors to AGFA-Gevaert, Mortsel, Belgium

Filed Feb. 26, 1973, Ser. No. 335,670

Claims priority, application Great Britain, Feb. 28, 1972, 9141/72

Int. Cl. B41c *1/06*

U.S. Cl. 117—36.2 **15 Claims**

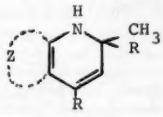
Group Art Unit 165

References Cited

UNITED STATES PATENTS

3,074,809	1/1963	Owen	117/36.8
3,094,417	6/1963	Workman	117/36.2 X
3,446,648	5/1969	Workman	117/36.8
3,666,477	5/1972	Goffe	96/114.1
3,667,959	6/1972	Bojara et al.	96/114.1
3,679,426	7/1972	Youngquist	117/36.8 X
3,707,377	12/1972	Tiers et al.	117/36.8 X

1. A recording process comprising the step of applying a heat pattern corresponding to an image to a recording material containing a silver compound that is generally non-light sensitive at a temperature below about 200°C and is adapted to undergo chemical reduction to release silver metal, while said silver compound is in reactive contact with an organic reducing compound corresponding to the following general formula:



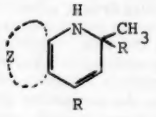
in which:

R represents a C_1–C_4 alkyl group, and

Z represents the necessary atoms to close a benzene, naphthalene, anthracene, carbazole, indole, benzo furan, dibenzofuran, phenothiazine, fluorene, indene, xanthene, or quinolin-2-one nucleus,

whereby said silver compound is reduced in the heated regions of said material to silver metal and forms a visible image of said pattern.

9. A sheet material comprising at least one recording layer containing an organic reducing compound corresponding to the following general formula:



in which:

R represents a C_1–C_4 alkyl group, and

Z represents the necessary atoms to close a benzene, naphthalene, anthracene, carbazole, indole, benzo furan, dibenzofuran, phenothiazine, fluorene, indene, xanthene, or quinolin-2-one nucleus,

and having in said layer or in a contacting layer a silver compound reducible by said organic reducing compound to silver metal under the influence of heat, said silver compound being generally non-light sensitive at a temperature below about 200°C.

B 319,339
PHOTOMASK BEARING A PATTERN OF METAL PLATED AREAS

Nathan Feldstein, Kendall Park, N.J., assignor to RCA Corporation

Filed Dec. 29, 1972, Ser. No. 319,339

Int. Cl. C03c *17/10*

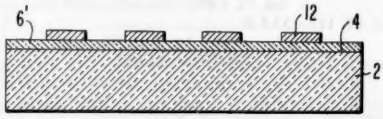
U.S. Cl. 117—37 R **3 Claims**

Group Art Unit 165

References Cited

UNITED STATES PATENTS

3,443,915	5/1969	Wood et al.	117/45 X
3,639,143	2/1972	Lussow et al.	117/47 X



1. An article of manufacture comprising a transparent, heat resistant, insulating substrate,

a thin substantially transparent layer of oxidized nickel or oxidized nickel alloy directly adhered to said substrate, and

a pattern of opaque metal areas on said transparent layer.

B 408,487
DYES AND PIGMENTED ARTICLES WHEREIN THE FIXING AGENT IS A POLYMER BASED ON N-FORMYL -N-ACRYLOYL-METHYLENEDIAMINES

Joachim Ribka, 4, Rugener Strasse, 605 Offenbach/Main-Burgel; Steffen Piesch, 32, An der Heide 32, 637 Oberursel/TS; Friedrich Engelhardt, 20, Hunfelder Strasse, 6 Frankfurt/Main; Gerhard Pfeiffer, 28 Staufenstrasse, 6233 Kelkheim/TS; Peter Klinke, 637 Oberursel/TS, and Wolfram Schidlo, 6239 Diedenbergen, all of Germany

Filed Oct. 23, 1973, Ser. No. 408,487

Claims priority, application Germany, Oct. 23, 1972, 225192

Int. Cl. C08f *3/90;* **C09b** *65/00;* **D06p** *1/76*

U.S. Cl. 117—38 **6 Claims**

Group Art Unit 165

References Cited

UNITED STATES PATENTS

2,478,378	8/1949	Dickey	260/89,7 R
2,966,481	12/1960	Brace	260/561 N
3,178,385	4/1965	Dinges	260/89.7 R
3,467,642	9/1969	Horiguchi	8/4 XR
3,694,506	9/1972	Franco	260/561 N

1. A dyed or pigmented fiber or film having the dye or pigment fixed thereto by a fixing agent, said fixing agent being a thermally crosslinked polymer of a linear addition polymer, said linear additional polymer being selected from the group consisting of (1) a linear additional homopolymer of a monomer of the formula

$$H - CO - \underset{\underset{R^1}{|}}{N} - CH_2 - NH - CO - \underset{\underset{R^2}{|}}{C} = \underset{\underset{R^3}{|}}{CH}$$

wherein R^1, R^2 and R^3 are hydrogen or alkyl having 1 to 5 carbon atoms and (2) a linear addition copolymer containing from about 0.2 to 50 percent by weight of said monomer of said formula and at least one copolymerizable olefinically unsaturated monomer.

B 324,495
OZONE TREATMENT OF ELASTOMERS

Robert Edward Tarney, Hockessin, and John Joseph Verbanc, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 17, 1973, Ser. No. 324,495
Int. Cl. B44d *1/092*
U.S. Cl. 117—47 A **10 Claims**
Group Art Unit 162

References Cited

UNITED STATES PATENTS

2,715,075	8/1955	Wolinski	117/47 A
2,897,092	7/1959	Miller	117/47 A
3,297,626	1/1967	Smith	260/80.78

OTHER PUBLICATIONS

Copolymer, In Rubber & Chemical Corporation Bulletin.

1. A process for modifying the surface of a vulcanized elastomer to insure adequate paint adhesion thereto which comprises contacting a sulfur-cured ethylene, propylene, nonconjugated diene elastomer containing reinforcing carbon black in amounts of at least 50 parts per hundred parts of elastomer with a gaseous atmosphere containing at least about 100 parts per million ozone for a time sufficient to oxidize said surface thus conditioning the surface for painting.

2. A process of claim **1** wherein the elastomer contains about from 75 to 200 parts of carbon black per hundred parts of elastomer.

3. A process of claim **2** wherein the elastomer contains about from 10 to 100 of oil per hundred parts of elastomer.

10. A process of claim **3** wherein the additional subsequent steps of applying a film of flexible resin-based paint selected from the group consisting of acrylic resin, alkyd resin, polyester resin, polyurethane or plasticized nitrocellulose lacquer to the modified surface of the elastomer, and baking the surface to cure said resin film thereon, thereby producing an article in which paint cannot be removed therefrom without tearing the surface of the elastomer.

B 220,683
METHOD OF PRODUCING METALLIZED THERMOPLASTIC ARTICLES

Leslie Hamilton Cobb, 11 Long Buftlers, Harpenden; David Mann, 172 Beech Road, St. Albans, and Timothy Alan Remmington, 4 Greenways, Hertford, all of England

Filed Jan. 25, 1972, Ser. No. 220,683
Claims priority, application Great Britain, Feb. 9, 1971, 4259/71
Int. Cl. C23c *13/02*
U.S. Cl. 117—62 **5 Claims**
Group Art Unit 161

References Cited

UNITED STATES PATENTS

2,740,732	4/1956	Peck et al.	117/35
3,431,135	3/1969	Keane et al.	117/107

1. A process for the production of a metallized oriented thermoplastic film, the steps of which consist essentially of vapour depositing a metal layer directly on the surface of an oriented and heat set thermoplastic film and thereafter heating the so-metallized film to a temperature of between 80°C. and 200°C. but below the temperature at which the film has been heat set.

B 264,257
METHOD OF PREPARING DIFFUSION TRANSFER RECEIVING SHEETS

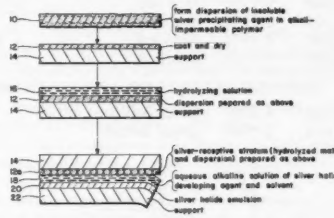
Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 675,472, Oct. 16, 1972, Pat. No. 3,671,241, which is a continuation-in-part of Ser. No. 437,799, March 8, 1965, abandoned. This application June 19, 1972, Ser. No. 264,257
Int. Cl. B44d *1/44*
U.S. Cl. 117—62 **22 Claims**
Group Art Unit 162

References Cited

UNITED STATES PATENTS

2,078,418	4/1937	Schneider	264/218
2,698,238	12/1954	Land	96/76
3,179,517	4/1965	Tregillus et al.	96/76
3,295,972	1/1967	Land	96/29
3,671,241	6/1972	Land	96/76 X
3,772,025	11/1973	Land	96/76


form dispersion of insoluble silver precipitating agent in alkali-impermeable polymer
coat and dry
support
hydrolyzing solution
dispersion prepared as above
support
silver-receptive stratum (hydrolyzed matrix and dispersion) prepared as above
aqueous alkaline solution of silver halide developing agent and solvent
silver halide emulsion
support

1. A method of forming an image-receiving element for use in forming images in silver by a diffusion transfer process, said method comprising the steps of:

a. forming a dispersion comprising a solution of an alkali-impermeable polymer with an insoluble silver precipitant dispersed therein, said alkali-impermeable polymer being hydrolyzable to an alkali-permeable polymer,
b. coating a layer of said dispersion on a support,
c. drying said coated layer, and
d. subjecting said coated layer to a hydrolysis treatment to convert at least a depthwise portion of said layer to said alkali-permeable polymer.

5. A method of forming an image-receiving layer for use in forming images in silver by a diffusion transfer process, said method comprising the steps of:

a. vacuum depositing a silver precipitating agent onto an alkali-impermeable polymer, said polymer being capable of being hydrolyzed to an alkali-permeable polymer;
b. dissolving said polymer in a solvent which is nonsolvent for said silver precipitating agent, and forming a substantially transparent layer consisting essentially of said polymer with said silver precipitating agent distributed therein on a support;
c. subjecting said layer to the action of a hydrolyzing agent for a time sufficient to hydrolyze said polymer to an alkali-permeable polymer to a depth sufficient for forming a silver transfer image in said hydrolyzed portion of said layer.

16. The method of forming a silver-receptive stratum which comprises vacuum depositing gold onto particles of cellulose acetate, dissolving said cellulose acetate particles and thereby forming a dispersion of gold in cellulose acetate, coating a layer of said cellulose acetate with said gold dispersed therein

on a support, and hydrolyzing said cellulose acetate to cellulose to a depth sufficient to permit the formation of a silver transfer image therein.

B 313,029

TREATING POLYMERIC SURFACES

Darrel D. Lidel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 80,482, Oct. 13, 1970, Pat. No. 3,761,299, and a continuation-in-part of Ser. Nos. 772,745, Nov. 1, 1968, abandoned, and Ser. No. 452, Jan. 2, 1970, abandoned. This application Dec. 7, 1972, Ser. No. 313,029

Int. Cl. B44d *1/04*; **G03c** *1/74*

U.S. Cl. 117—93.1 R **15 Claims**

Group Art Unit 162

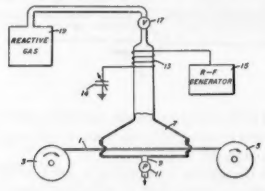
References Cited

UNITED STATES PATENTS

2,257,177	9/1941	Luster	204/159.2
2,648,097	8/1953	Kritchever	204/159.2
2,845,541	7/1958	Berry et al.	204/159.2
2,910,723	11/1959	Travel	204/159.2
3,148,020	9/1964	Graham	117/47 A
3,255,099	6/1966	Wolinski	117/47 A
3,274,090	9/1966	Amborski	117/93.1 CD
3,274,091	9/1966	Amborski	117/93.1 CD
3,275,540	9/1966	McBride	117/93.1 CD
3,493,416	2/1970	Hansen et al.	117/61
3,526,583	9/1970	Hayward	117/47 A
3,600,122	7/1966	Coleman	117/93.1 CD

FOREIGN PATENTS OR APPLICATIONS

923,846	4/1963	Great Britain
1,069,953	5/1967	Great Britain



1. A process for changing the properties of a surface of a shaped organic polymeric material, said surface containing carbon to hydrogen bonds having a dissociation energy of less than about 100 K cal./mol, said process comprising exposing said surface to a stream of a mixture of (1) a reactive gas selected from the group consisting of (a) N_2O_3, (b) water vapor and (c) a vapor of an organic compound which is an acid, an alcohol, an ester, an amine, a nitrile or a vinyl compound having a vinyl moiety activated by an adjacent electronegative group, said gas having a partial pressure of at least 0.001 mm. Hg. at a temperature in the range of about 10 to about 150°C., with (2) an activator gas selected from the group consisting of argon, helium, krypton, neon, nitrogen, radon, xenon and mixtures thereof, said stream of gases having been activated by treating with a radio frequency electromagnetic field ranging from about ½ to about 30,000 megahertz and said field being remote from said support, said process being conducted at a pressure of about 0.01 to about 20 mm Hg., said acid being an aliphatic or aromatic mono- or dicarboxylic acid having up to about 10 carbon atoms, said alcohol being aliphatic mono- or polyol or a phenol having up to about 10 carbon atoms, said ester being an ester being derived from said acid and an aliphatic monohydroxy alcohol having less than 6 carbon atoms, said amine being primary, secondary or tertiary aliphatic or aromatic amine having up to 20 carbon atoms, said nitrile being an aromatic or aliphatic cyano-substituted compound having up to about 10 carbon atoms, and said vinyl compound being a compound having a vinyl, vinylene or vinylidene group attached to a carbonyl, sulfonyl, cyano, formyl, carboxy, halogen or nitro group.

11. A polymeric article treated by the process of claim **1.**

B 320,261

PROCESS FOR THE PRODUCTION OF SHEET MATERIALS WITH REVERSIBLE ABSORPTIVITY FOR MOISTURE

Rudolf Gaeth, 10 Weinbietstrasse, 6703 Limburgerhof; Friedrich Hoelscher, 4 Huettenmuellerstrasse, 6700 Ludwigshafen; Bernard Schmitt, 40 Lindenaustrasse, 7815 Kirchzarten, and Dieter Blum, 11 Kantstrasse, 6703 Limburgerhof, all of Germany

Continuation of Ser. No. 100,779, Dec. 22, 1970, abandoned. This application Jan. 2, 1973, Ser. No. 320,261

Int. Cl. B44d *1/48*

U.S. Cl. 117—119.6 **13 Claims**

Group Art Unit 162

References Cited

UNITED STATES PATENTS

2,754,280	7/1956	Brown et al.	117/161 UB
2,961,332	11/1960	Nairn	117/11
3,044,970	7/1962	Baumeister et al.	260/2.5 D
3,239,365	3/1966	Petry	117/11
3,310,422	3/1967	Petry	117/11 X
3,598,770	8/1971	Moore et al.	117/140 A

1. A process for the production of sheet materials which absorb moisture vapor reversibly, which comprises applying an aqueous dispersion of a polymer, which contains polymerized units of at least 5% by weight of a tert-butyl ester of an ethylenically unsaturated carboxylic acid at a pH of 1.5 or less to gas permeable sheet materials and heating at the decomposition temperature of the polymer to thereby eliminate an olefin and form free carboxylic groups in the polymer.

7. A process as set forth in claim **1** wherein some or all of the carboxyl groups exposed by said thermal decomposition are neutralized by salt formation.

10. A process as set forth in claim **1** wherein the carboxyl groups exposed by said thermal decomposition are reacted with a reactive polyfunctional compound.

B 319,414

GLASS FIBERS COATED WITH A SIZE CONTAINING STARCH ESTERS OF ISOALKANOIC ACIDS

Albert R. Morrison, 857 Country Drive, Newark, Ohio 43055; Harold L. Haynes, Rt. 2225 River Rd., Granville, Ohio 43023, and Reuben Hays Bell, Heath, Ohio 43055

Filed Dec. 29, 1972, Ser. No. 319,414

Int. Cl. C03c *25/02*; **C08b** *25/02*

U.S. Cl. 117—126 GQ **5 Claims**

Group Art Unit 162

References Cited

UNITED STATES PATENTS

3,461,090	8/1969	Haynes	260/17.4
3,472,682	10/1969	Rommel	117/126 GQ
3,481,771	12/1969	Doering	117/126 GQ
3,513,156	5/1970	Speakman	260/233.5
3,615,311	10/1971	Ignatius	65/3
3,664,855	5/1972	Morrison	106/212
3,720,662	3/1973	Tessler	260/233.5
3,746,558	7/1973	Berkhout	117/126 GQ

1. Glass fibers having an aqueous coating thereon consisting essentially of solubilized starch; unctuous material from the group consisting of vegetable waxes, animal waxes, mineral waxes, synthetic waxes, fats and gelled oils; and an effective amount of swollen but unburst starch granules modified by esters of an isoalkanoic acid of from 4 to 6 carbon atoms inclusive, to retain said unctuous material as a lubricant.

5. Glass fibers having a coating thereon consisting essentially of the following solids in percent by weight:

Esterified starch having ester groups of the formula O R - C - O - starch wherein R is an isoalkyl group of from 3 to 5 carbon atoms	5-90%
Underivatized starch	0-75%
Solid unctuous material	5-40%
Secondary film formers	0-5%
Nonionic oils	0-5%
Cationic lubricants	1-7%
Emulsifying agents	0.5-7%

an effective amount of said esterified starch being present as swollen and unburst starch granules to restrict migration of the unctuous material through the fibers.

B 343,136

CORROSION RESISTANT COATED METAL

George W. Bussell, 5051 Steadman St., Dearborn, Mich. 48126

Division of Ser. No. 179,168, Sept. 9, 1971,. This application Mar. 20, 1973, Ser. No. 343,136

Int. Cl. B32b *15/08;* **C09d** *5/08;* **C23b** *13/00*

U.S. Cl. 117—132 B **5 Claims**

Group Art Unit 161

References Cited

UNITED STATES PATENTS

3,340,213	9/1967	McGary et al.	260/22 EP
3,341,484	9/1967	Hoy	260/18
3,341,485	9/1967	Long	260/18
3,493,483	2/1970	Gacesa	204/181
3,692,717	9/1972	Blank et al.	260/21
3,730,865	5/1973	Kapalko et al.	204/181

1. An article of manufacture consisting of a metal object having a corrosion resistant 0.4 to 0.5 mil thick coating of heat cured resin consisting essentially of the heat reaction product of a mixture consisting of 15 to 20 percent maleic anhydride and 85 to 80 percent of a synthetic oil containing alicyclic rings consisting of the esterification product of one mole 9oxatetracyclo-4.4.1 $^{2,5}0^{1,6}0^{8,10}$ undecan-**4-ol** with three moles of unsaturated long chain fatty acid.

B 265,727

PROCESS FOR MANUFACTURING LEATHER-LIKE MATERIALS

Mineo Yamagata; Akira Akamatsu, and Kazushi Togo, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed June 23, 1972, Ser. No. 265,727

Claims priority, application Japan, July 2, 1971, 46-48652

Int. Cl. D06n *3/00;* **B29d** *27/00*

U.S. Cl. 117—135.5 **7 Claims**

Group Art Unit 162

References Cited

UNITED STATES PATENTS

2,632,740	3/1953	Schibler	260/6
3,369,925	11/1968	Matsushita	117/63
3,522,201	7/1970	MacNair	117/63
3,554,789	1/1971	Kigane	117/135.5
3,582,397	6/1971	Shibata	117/140 A
3,582,442	6/1971	Kaneko	260/6
3,634,544	1/1972	Takeda	260/2.5 AY
3,676,206	7/1972	Nishitani	117/63

OTHER PUBLICATIONS

Central Patents Index (CPI) Abstract 46842S, Derwent Publications, London, 9–10–71.

1. A process of preparing a porous, leather-like material which comprises:

a. coating or impregnating a fibrous base with a heterogeneous mixture of a liquid carrier and two polymers,

1. said polymers being a polyamino acid and an elastomer respectively,
2. at least one of said polymers being present in said mixture as a dispersed, separate phase,
3. said mixture containing 2 to 50 percent solid matter by weight, and having a viscosity of 10 to 100,000 centipoises,
4. the weight ratio of said polyamino acid to said elastomer in said solid matter being between 9:1 and 1:9; and

b. drying the coated or impregnated sheet material until said carrier is substantially completely removed.

B 314,800

A CREASE RESISTANT CELLULOSIC TEXTILE MATERIAL

Harro Petersen, 23 Kalmitstrasse, 6710 Frankenthal; Klaus Erhardt, 16 Amsterdamer Strasse, 6700 Ludwigshafen; Wilhelm Ruemens, 35 Hardenburgstrasse, 6703, Heinz Bille, 16 Eschkopfstrasse, 6703, both of Limburgerhof, and Guenther Reuss, 59 Wredestrasse, 6700 Ludwigshafen, all of Germany

Filed Dec. 13, 1972, Ser. No. 314,800

Int. Cl. D06m *13/00*

U.S. Cl. 117—139.4 **1 Claim**

Group Art Unit 162

References Cited

UNITED STATES PATENTS

2,731,364	1/1956	Reibnitz et al.	117/139.4 X
2,876,062	3/1959	Torke et al.	117/145 X

1. A cellulosic textile material which has been impregnated with an agent for imparting crease resist to said textile material, said agent comprising an amino resin prepared by reacting 1 mole of urea with from 3 to 10 moles of formaldehyde in aqueous solution at a pH of from 3 to 0, neutralizing said solution to a pH of from 6 to 7.5 and at a temperature of from 20° to 70°C adding urea and glyoxal in such amounts that the resulting total molar ratio of urea:formaldehyde:glyoxal is 1:1.5 to 2.5:0.1 to 0.5, said resin having been cured in the presence of an acid or potentially acid catalyst at a temperature of from 100° to 210°C.

B 292,126

SURFACE PASSIVATION OF GAAS JUNCTION LASER DEVICES

John Cameron Dyment, Chatham, and Bertram Schwartz, Westfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 25, 1972, Ser. No. 292,126
Int. Cl. H01l *1/34*
U.S. Cl. 117—200 **10 Claims**
Group Art Unit 162

References Cited

UNITED STATES PATENTS

2,875,384	2/1959	Wall Mark	117/200
3,260,626	7/1966	Schink	117/200
3,725,161	4/1973	Kuper	117/118

1. A method of treating the mirror surfaces of a junction laser device comprising $Z_xGa_{1-x}As$ where $x = 0 - 0.7$ and Z is selected from the group consisting of Al and In in order to provide a protective coating against ambient conditions without degrading the said mirror surfaces comprising growing an oxide layer on the surface of said device by immersing said device in a first aqueous solution comprising H_2O_2 wherein the pH of the solution is within the range 1.5–3.5, and immersing said device in a second aqueous solution comprising H_2O_2 and an amount of a pH modifier to give a pH of the second solution within the range 6–8.

6. The method according to claim 1 further comprising baking said device subsequent to immersion in the first solution at successively increasing temperatures up to approximately 150°–350°C for a period of approximately ½ hour to 48 hours.

10. The method according to claim 1 further comprising baking said device subsequent to immersion in the second solution at successively increasing temperatures up to approximately 150°–350°C for a period of approximately ½ hour to 48 hours.

B 354,510

METHOD OF PROVIDING TRANSPARENT CONDUCTIVE ELECTRODES ON A TRANSPARENT INSULATING SUPPORT

Antonius Marinus Van Boxtel, and Cornelis Jan Gerritsma, both of Emmasingel, Eindhoven, Netherlands

Filed Apr. 25, 1973, Ser. No. 354,510
Claims priority, application Netherlands, Apr. 28, 1972, 7205767
Int. Cl. H05k *3/02*
U.S. Cl. 117—211 **13 Claims**
Group Art Unit 234

References Cited

UNITED STATES PATENTS

3,076,727	2/1963	Harwig	117/211
3,210,214	10/1965	Smith	117/5.5 X
3,443,915	5/1969	Wood et al.	117/211 X
3,537,925	11/1970	Chen	117/5.5 X
3,620,795	11/1971	Kiba	117/5.5
3,702,723	11/1972	Borden	350/160 LC

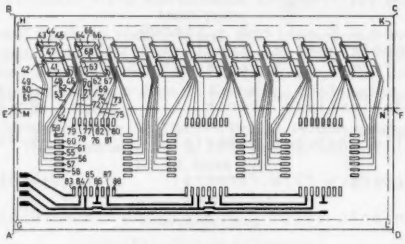
1. A method of producing a device comprising a transparent insulating support which is provided with a pattern of conductors of a transparent conductive material comprising the steps of:

a. forming on said support auxiliary layer comprising a metal layer containing at least one recess corresponding to said pattern of conductors;

b. forming a transparent conductive layer on said auxiliary layer and in each said recess;

c. forming a solderable metal layer on a part of the exposed surface of said transparent conductive layer; and

d. selectively dissolving said auxiliary layer so as to remove said auxiliary layer and the portion of said transparent conductive layer overlying said auxiliary layer, said conductor pattern comprising a first part having only a transparent layer and a second part having multiple layers comprising both at least one lowermost, support-adjoining transparent layer and one solderable layer therabove.



B 316,014

METHOD OF MAKING A SEMICONDUCTOR DEVICE

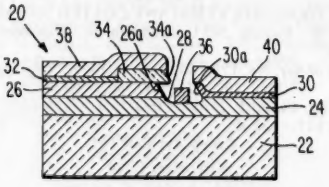
Raymond Harkless Dean, Lawrenceville, N.J., assignor to RCA Corporation, Princeton

Filed Dec. 18, 1972, Ser. No. 316,014
Int. Cl. H01l *7/00;* **B44d** *1/18*
U.S. Cl. 117—212 **11 Claims**
Group Art Unit 165

References Cited

UNITED STATES PATENTS

3,490,943	1/1970	Werdt	117/212
3,675,313	7/1972	Driver	29/573
3,678,573	7/1972	Driver	29/571
3,716,429	2/1973	Napoli	156/17
3,752,702	8/1973	Jzuka	117/212
3,764,865	10/1973	Napoli	317/235 R
3,769,109	10/1973	MacRae	156/3



1. A method of making a semiconductor device comprising the steps of

coating a first surface area of a body of a single crystalline semiconductor material with a first metal film,

coating a second surface area of said body which is juxtaposed to said first surface area with a layer of a masking material with an edge of said masking layer extending at least to an edge of said first metal film,

etching away a portion of the material of the masking layer from said edge thereof, to expose a portion of the body between said edges of the first metal film and the masking layer,

etching a groove in said exposed portion of the body with the groove extending under at least one of the said edges of the first metal film or the masking layer so that said edge extends in cantilever fashion over said groove, and

depositing a second metal film on the bottom of said groove with an edge of said second metal film being in substantially transverse alignment with the said cantilevered edge.

B 248,916

PROCESS BY WHICH AT LEAST ONE STRIPE OF ONE MATERIAL IS INCORPORATED IN A LAYER OF ANOTHER MATERIAL

Rudolph E. Damschroder, Sanibel, Fla., and Donald J. Hughes, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 1, 1972, Ser. No. 248,916
Int. Cl. H01f *10/00*
U.S. Cl. 117—239 **11 Claims**
Group Art Unit 162

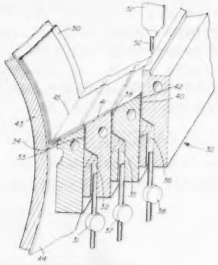
References Cited

UNITED STATES PATENTS

2,761,791	9/1956	Russell	117/83 X
2,932,855	4/1960	Bartlett	118/412 X
3,050,758	8/1962	Wilkins	118/221 X
3,243,376	3/1966	Lovick et al.	117/237 X
3,264,385	8/1966	Reed	264/104
3,508,947	4/1970	Hughes	117/62.1 X
3,647,541	3/1972	Prevot	117/239
3,681,138	8/1972	Ankenbrand et al.	117/238
3,704,167	11/1972	Yamamoto et al.	117/239
3,729,317	4/1973	Stimson	117/235 X

OTHER PUBLICATIONS

IBM Tech. Dis. Bull., Vol. 9, No. 7, Dec. 66, page 779, Friedman et al., Lubricants For Mag. Rec. Med.



1. A process for applying to at least one surface of a support at least one stripe of a first composition within a flow comprising at least one second and compatible composition, which comprises the steps of:

moving the support in a prescribed path;

forming a flow of said second composition directed toward said support;

while forming said flow, introducing at least one flow of said first composition as a stripe within said flow to form a composite flow; and

applying continuously said composite flow to the one surface of said moving support;

whereby said stripe extends in the direction of movement of said support and the exposed surfaces of said flow and stripe are generally coplanar.

10. A process for applying to at least one surface of a generally transparent, flexible support at least one stripe of a first composition within at least the outermost layer of a number of layers of different compositions superposed in contacting relation, which comprises the steps of

moving the support in a prescribed path;

forming a laminar flow of each different composition into a composite flow directed toward said support in which the laminar flows are in a predetermined order and superposed in contacting relation with each other;

while forming said composite flow, introducing at least one flow of said first composition as a stripe within the laminar flow constituting the outermost layer relative to said support;

applying continuously said composite flow to the one surface of said moving support;

whereby said stripe extends in the direction of movement of said support and the exposed surface of said outermost layer and stripe are generally coplanar.

B 371,836

VAPOR DEGREASING SYSTEM

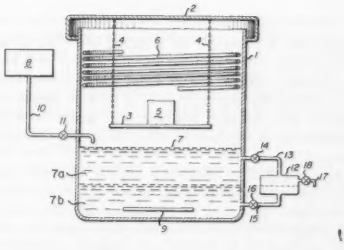
Robert Michael Healy, Warrenville, Ill., assignor to Litton Systems, Inc., Chicago, Ill.

Filed June 20, 1973, Ser. No. 371,836
Int. Cl. B08b *3/10, 5/00*
U.S. Cl. 134—31 **1 Claim**
Group Art Unit 173

References Cited

UNITED STATES PATENTS

2,113,129	4/1938	Dinley	134/11
2,285,333	6/1942	Humphrey	252/369 X
3,070,463	12/1962	Barday	134/11
3,085,918	4/1963	Sherliker et al.	134/30
3,094,469	6/1963	Strauss et al.	134/40 X
3,733,218	5/1973	Begun	134/40 X



1. The method of cleaning an article contaminated with organic acid materials so as to form a biodegradable waste comprising the steps of:

inserting the article to be cleaned of organic acid residues into the vapor section of a vapor degreaser, said vapor degreaser having a two-phase liquid solvent located in the sump thereof, said two-phase liquid solvent comprising a first liquid containing an organic solvent and a second liquid containing water and an inorganic base of low volatility, said inorganic base being sufficiently strong to neutralize said organic acid materials, and said first and second liquids being immiscible in one another;

heating said mixture to boil said two-phase liquid solvent wherein said solvent is in a state of turbulance and a vapor of water and organic solvent is created in said vapor section and refluxing said mixture, without vaporizing said inorganic base.

B 359,946

COMPOSITION AND PROCESS FOR THE REMOVAL OF ASPHALTENIC CONTAINING ORGANIC DEPOSITS FROM SURFACES

Gary D. Sutton, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 164,449, July 20, 1971, abandoned. This application May 14, 1973, Ser. No. 359,946
Int. Cl. C23g *5/02*
U.S. Cl. 134—40 **17 Claims**
Group Art Unit 173

References Cited

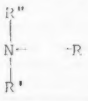
UNITED STATES PATENTS

1,643,675	9/1927	Montgomerie	252/311.5
2,509,197	5/1950	Borus et al.	252/153 X
2,685,523	8/1954	Cross, Jr. et al.	106/278 X
2,750,343	6/1956	Beber	252/153
2,904,458	9/1959	Dykstra	252/153 X
3,137,730	6/1964	Fitz-William	260/583 P X
3,279,541	10/1966	Knox et al.	252/8.55 B X

OTHER PUBLICATIONS

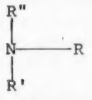
Jeffries–Harris et al. "Solvent Stimulation in Low pounds, by the dissolution of the deposits in a solvent comprised of an aromatic hydrocarbon and an amine.

1. A method for removing organic deposits containing asphaltenic compounds from surfaces which comprises contacting said deposits with a solvent consisting essentially of a hydrocarbon selected from the group consisting of benzene, toluene, and xylene and an amine selected from the group consisting of pyridine, morpholine, and primary, secondary and tertiary amines represented by the formula



wherein R, R′, and R″ are selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms, alkyl amine radicals having from 1 to 4 carbon atoms, cycloalkyl radicals having from 3 to 6 carbon atoms and mixtures thereof and, further, wherein said amine is present in said solution in an amount of from about 1 percent to about 50 percent by volume.

6. A method of removing organic deposits containing asphaltenic compounds from within oil production equipment comprising the steps of contacing said deposits within said equipment with a solvent consisting essentially of a hydrocarbon selected from the group consisting of benzene, toluene, and xylene, and an amine selected from the group consisting of pyridine and morpholine, and primary, secondary, and tertiary amines represented by the formula



wherein R, R′, and R″ are members of the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms, alkyl amine radicals having from 1 to 4 carbon atoms and cycloalkyl radicals having from 3 to 6 carbon atoms and mixtures thereof; and removing said solvent from said equipment after said deposits have been dissolved therein; wherein said amine is present in said solvent in an amount of from about 1 percent to about 35 percent by volume.

11. A solvent for asphaltenic-containing compounds, said solvent consisting essentially of a hydrocarbon selected from the group consisting of benzene, toluene, and xylene, and an amine selected from the group consisting of pyridine, diethylaminopropylamine, diethylamine, n-butylamine, dimethylaminopropylamine, ethylenediamine, and diethylenetriamine, wherein said amine is present in an amount of from 1 percent to about 35 percent by volume.

16. A method for removing organic deposits containing asphaltenic compounds from surfaces which comprises contacting said deposits with a solvent consisting essentially of a hydrocarbon selected from the group consisting of benzene, toluene, and xylene, and an amine represented by the general formula

wherein R, R′, and R″ are selected from the group consisting of hydrogen, alkyl radicals having from 1 to 4 carbon atoms, alkyl amine radicals having from 1 to 4 carbon atoms, and mixtures thereof wherein said amine has no more than 2 nitrogen atoms per molecule and there is no direct nitrogen-to-nitrogen bonding and further wherein said amine is present in said solution in an amount of from about 1 percent to about 35 percent by volume.

B 346,613

GRID STRUCTURE FOR HIGH RATE LEAD/ACID BATTERY

Robert S. Margulies, Redondo Beach, Calif., and Royce E. Biddick, Edina, Minn., assignors to TRW Inc., Redondo Beach, Calif.

Filed Mar. 30, 1973, Ser. No. 346,613
Int. Cl. H01m *35/08*
U.S. Cl. 136—36 **6 Claims**
Group Art Unit 115

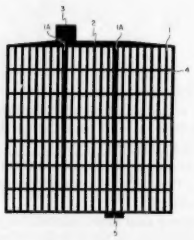
References Cited

UNITED STATES PATENTS

1,370,013	3/1921	Ford	136/48
1,376,929	5/1921	Ford	136/48
1,508,776	9/1924	Cook	136/48
2,064,324	12/1936	Schnaubelt	136/38
2,690,464	9/1954	Harris	136/36

FOREIGN PATENTS OR APPLICATIONS

577,719	6/1959	Canada	136/36
436,266	10/1935	Great Britain	136/36



1. A rectangular battery grid structure comprising:

A. at least one current-collector tab on one edge of the grid structure;

B. a plurality of parallel current-carrying elements, wherein said element on one edge of said grid structure is tapered widest at the middle of said element and said tab is positioned at said thickest width;

C. a plurality of parallel current-carrying elements joined at right angle to said elements in (B) wherein at least two of which are equispaced and are tapered from one side of the grid structure to the opposite side of the grid structure

with the broadest width joining said tab-carrying side element in the widest section wherein the number and size of said current-carrying elements are governed by a mathematical equation:

$fm = I[E-I(R_a+R_p+R_r)]/W$

wherein I is plate current, E is half-cell potential of the plate, R_a is grid resistance, R_r is electrolyte resistance, and R_p is pellet resistance, and W is weight of plate to give a figure of merit, *fm*.

4. A rectangular pasted plate for a storage battery comprising:

A. a plurality of rectangular pellets held in a grid pattern formed by

B. a plurality of parallel current-carrying elements, wherein said element on one side of said grid pattern is tapered widest at the middle of said element;

C. a plurality of parallel current-carrying elements joined at right angle with said elements in (B) wherein at least two of the elements are equispaced across the grid pattern and are tapered from one side of the grid structure to the opposite side of the grid structure with the broadest width joining said tapered element in (B) at the widest section; and

D. a current-collector tab on said tapered element of (B) at the intersection of one of said tapered elements of (C) wherein the number and size of said current-carrying elements are governed by a mathematical equation:

$fm = I[E-I(R_a+R_p+R_r)]/W$

wherein I is plate current, E is half-cell potential of the plate, R_a is grid resistance, R_r is electrolyte resistance, R_p is pellet resistance, and W is weight of plate to give a figure of merit, fm.

B 351,926
THERMAL BATTERY

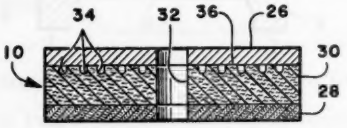
Arlen R. Baldwin, and Thomas A. Reinhardt, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 17, 1973, Ser. No. 351,926
Int. Cl. H01m *23/00*
U.S. Cl. 136—83 T **8 Claims**
Group Art Unit 115

[56] **References Cited**

UNITED STATES PATENTS

3,533,844	10/1970	Klopp et al.	136/83 T
3,677,822	7/1972	Bush	136/83 T



1. A thermal battery comprising a casing; a plurality of electrochemical cells stacked in said casing, each cell including an anode disc, an electrically conductive heat generating disc, and a normally solid fusible electrolyte disc sandwiched between said anode and heat generating discs in direct contact with said anode over a substantial portion of their adjacent surfaces, at least one of said anode and electrolyte discs being provided with depressed portions at interface between said anode and electrolyte discs and spaced radially inward from peripheral portions of said discs, the depressed portions being disposed circumferentially about the interface for trapping and inhibiting movement of molten materials, formed at said interface during said battery operation, to peripheral edges of said cells; and means for igniting said heat generating discs.

B 317,347
HERMETICALLY SEALED THERMOCOUPLE ASSEMBLY

Joseph N. Parris, Irwin, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 21, 1972, Ser. No. 317,347
Int. Cl. H01v *1/02*
U.S. Cl. 136—234 **14 Claims**
Group Art Unit 221

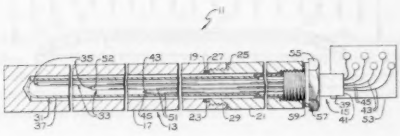
References Cited

UNITED STATES PATENTS

2,888,508	5/1959	Rademacher	73/359
3,263,502	8/1966	Springfield	136/232
3,512,413	5/1970	Krusenstierna et al.	136/227
3,537,911	11/1970	Hynd	136/234

FOREIGN PATENTS OR APPLICATIONS

696,438	10/1964	Canada	285/187
1,012,896	12/1965	Great Britain	285/187



1. A thermocouple assembly, comprising:

an outer sheath, comprising: a metal case having an open end and a closed end;

an inner support ledge adjacent the open end of said metal case;

a pressure deformable metal washer positioned on said inner support ledge of said metal case, said washer having a coefficient of expansion greater than said metal case;

a metal tube having a first end and a second end, the first end being insertable in the open end of said metal case against said metal washer, said metal tube having a coefficient of expansion at least the same as the metal case but less than said metal washer; and

means for securing the first end of said metal tube in the open end of said metal case with the first end of said tube against said washer to prevent the first end of said metal tube and of said metal case from separating when said outer sheath is heated to expand at least said metal washer to form a hermetic seal at the union of said case and said tube capable of withstanding high pressures;

a thermocouple probe mounted in said sheath; and

means for forming a hermetic seal between said thermocouple probe and the second end of said metal tube to contain an atmosphere within said outer sheath.

B 339,699
FINE TUNING POWER DIODES WITH IRRADIATION

Krishan S. Tarneja, and John Bartko, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 9, 1973, Ser. No. 339,699
Int. Cl. H01l *7/54*
U.S. Cl. 148—1.5 **4 Claims**
Group Art Unit 111

References Cited

UNITED STATES PATENTS

2,911,533	11/1959	Damask	148/1.5 X
3,272,661	9/1966	Tomono et al.	148/1.5
3,533,857	10/1970	Mayer et al.	148/1.5
3,736,192	5/1973	Tokuyama et al.	148/1.5

OTHER PUBLICATIONS

Clark et al., "Isochronal Annealing of P and N-Type Silicon Irradiated at 80°K," Phil. Mag., Nov. 1969, 20(167), pp. 951, 958.

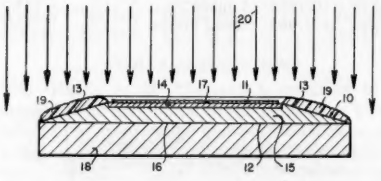
1. A method of fine tuning a diode of a type of diodes comprising the steps of:

A. determining the minority carrier radiation damage factor for the type of diode with a given electron radiation source of intensity between about 1 and 3 Mev;

B. measuring the nominal minority carrier lifetime in the anode region of the type of diode;

C. establishing the nominal minority carrier lifetime desired in the anode region of the type of diode;

D. thereafter determining the radiation dosage from the given electron radiation source to obtain the desired



nominal minority carrier lifetime by the relationship $1/\tau = 1/\tau_o + K\phi$

where

τ is the established nominal minority carrier lifetime,

τ_o is the measured nominal minority carrier lifetime,

K is the minority carrier radiation damage factor, and

ϕ is the electron radiation dosage; and

E. irradiating a major surface of at least one diode of the type of diodes with the given radiation source to the determined radiation dosage.

B 358,311

METHOD OF HEAT TREATING SAW

Toushichi Ishizawa, and Seiya Ishizawa, both of 1-289, Kulsunoya, Shizwaka Shiguoka-shi, Japan

Filed May 8, 1973, Ser. No. 358,311

Int. Cl. C22d 9/24

U.S. Cl. 148—147 **6 Claims**

Group Art Unit 111

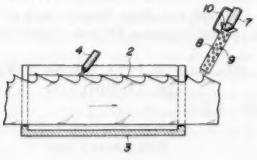
References Cited

UNITED STATES PATENTS

538,979	5/1895	Platt	148/147
1,887,098	11/1932	Klopp	148/147 X
2,327,129	8/1943	Runan	148/147
2,958,524	11/1960	Delapena	148/147 X

FOREIGN PATENTS OR APPLICATIONS

46-30367	3/1971	Japan	148/147



1. A method of heat-treating saws comprising the steps of placing the saw in a cooling liquid such that the tooth ends project no more than about 2 mm above the liquid surface while keeping the other tooth portion as well as the saw body submerged in the cooling liquid, blowing gas on said said saw tooth portion so as to form a 1 to 2 mm deep depression or hollow in the liquid surface surrounding said saw tooth end portion to thereby let said tooth end portion rise up higher above the liquid surface, heating said portion to the hardening temperature while maintaining the above-said condition, then separating said heated tooth end portion away from the heating means and the depression forming means to allow the depressed liquid surface around the tooth end portion to restore the normal planar state to thereby quench the heated tooth end portion.

B 309,756

METHOD OF MAKING A TRANSMISSION PHOTOCATHODE DEVICE

Henry Kressel, Elizabeth, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 27, 1972, Ser. No. 309,756

Int. Cl. H01l 7/36, 7/38

U.S. Cl. 148—171 **4 Claims**

Group Art Unit 111

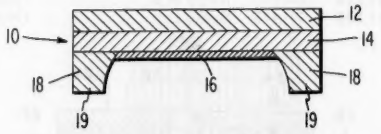
References Cited

UNITED STATES PATENTS

3,364,084	1/1968	Ruehrwein	148/175
3,478,213	11/1969	Simon et al.	317/235 NA
3,537,029	10/1970	Kressel et al.	148/171 X
3,560,275	2/1971	Kressel et al.	148/171
3,604,991	9/1971	Yonezu et al.	148/171 X
3,672,992	6/1972	Schaefer	117/219
3,770,518	11/1973	Rosztoczy et al.	148/171

FOREIGN PATENTS OR APPLICATIONS

1,239,893	7/1971	Great Britain	148/171



1. The method for making a transmission photocathode device comprising the steps of:

a. epitaxially growing a first layer of a P type semiconductor material on a substrate of the same semiconductor material as that of the first layer; b. epitaxially growing a second semiconductor layer upon said P type first layer, said second semiconductor layer being of a P type semiconductor material having a higher bandgap energy than the semiconductor material of said P type first layer;

c. removing said substrate to expose said P type first layer; and

d. coating said exposed P type first layer with a workfunction-reducing activation layer.

B 361,734

SPUTTERING METHOD FOR GROWTH OF THIN UNIFORM LAYERS OF EPITAXIAL SEMICONDUCTIVE MATERIALS DOPED WITH IMPURITIES

Alexander J. Noreika, and Maurice H. Francombe, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 18, 1973, Ser. No. 361,734
Int. Cl. H01i 7/36
U.S. Cl. 148—175 **6 Claims**
Group Art Unit 111

References Cited

UNITED STATES PATENTS

3,372,069	3/1968	Bailey et al.	148/175
3,450,581	6/1969	Shortes	204/192
3,660,180	5/1972	Wajda	148/175
3,673,071	6/1972	Pritchard et al.	204/192
3,716,404	2/1973	Hirao et al.	148/175
3,751,310	8/1973	Cho	148/175

OTHER PUBLICATIONS

Manaseit, H. et al.; Heteroepitaxial GaAs... Formation and Prop. of Zn-Doped Films; in Sol. Staesci. & Techn., 1972, pp. 99–103. [J. Elect. Chem. Soc. – TP250A54j].

1. A method for growing uniformly thin doped layers of epitaxial semiconductive material comprising the steps of:

a. positioning adjacent one of two oppositely-disposed electrodes a substrate on which the epitaxial layer of semiconductive material is to be grown,

b. positioning a target of semiconductive material from which the epitaxial layer is to be formed on the other of said two electrodes,

(c) heating said substrate to a temperature of about 530°C to 600°C,

d. evacuating the space around said electrodes of air while introducing into said space controlled amounts of an inert ionizable gas together with a reactive chemical compound in the vapor state in which a P-type or N-type dopant element is liberated in a confined radio-frequency discharge, the ionizable gas pressure being in the range of about 2 to 8×10^{-3} torr with the reactive compound being present in the amount of about 1 part to 10^2–10^3 parts inert gas, and

e. applying a radio-frequency potential across said two electrodes to thereby establish a radio-frequency discharge between the electrodes whereby atoms of the target will be knocked loose from the target by impining ions of the ionizable gas and will travel to the substrate to form an epitaxial layer doped with the liberted dopant element.

B 365,371

METHOD OF DOPING A POLYCRYSTALLINE SILICON LAYER

Fukashi Imai, 39 Okaya-shi, and Yukio Morozumi, 3684, Chino, Chino-shi, both of Nagano-ken, Japan

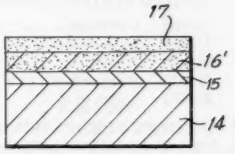
Filed May 30, 1973, Ser. No. 365,371
Claims priority, application Japan, June 7, 1972, 47-55993
Int. Cl. H01l 7/34
U.S. Cl. 148—188 **7 Claims**
Group Art Unit 111

References Cited

UNITED STATES PATENTS

3,460,007	8/1969	Scott	148/188 X
3,646,665	3/1972	Kim	148/187 X
3,673,679	7/1972	Carbajal et al.	148/188 X
3,690,968	9/1972	Fa et al.	148/188

1. In a method for fabricating a wafer type semiconductor wherein an insulating layer and doped polycrystalline silicon layer are successively deposited on a semiconductor substrate, the improvement comprising depositing an insulating film layer of predetermined thickness on said semiconductor substrate, said insulating film completely overlying the deposition surface of said semiconductor substrate, depositing a substantially pure polycrystalline silicon layer of predetermined thickness on said insulating film layer, thereafter depositing a doped oxide film layer of predetermined thickness on said



substantially pure polycrystalline silicon layer, and thermally treating said layered wafer to initiate dopant diffusion into said substantially pure polycrystalline silicon layer, whereby a high resistance semiconductor device with an accuracy of ± 20 percent to specification is formed.

B 339,218

PRODUCTION OF SEMICONDUCTIVE MONOCRYSTALS OF GROUP III-V SEMICONDUCTOR COMPOUNDS

Wolfgang Touchy, Munich, Germany, assignor to Seimens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 8, 1973, Ser. No. 339,218
Claims priority, application Germany, Mar. 23, 1972, 2214224
Int. Cl. H01l 7/44
U.S. Cl. 148—189 **8 Claims**
Group Art Unit 111

References Cited

UNITED STATES PATENTS

3,245,847	4/1966	Pizzarello	148/189 X
3,255,056	6/1966	Flatley et al.	148/191 X
3,298,879	1/1967	Scott et al.	148/187
3,408,238	10/1968	Sanders	148/190 X
3,422,322	1/1969	Haisty	148/190 X
3,502,518	3/1970	Antell	148/190 X
3,537,921	11/1970	Boland	148/189 X
3,660,156	5/1972	Schmidt	148/189 X
3,660,178	5/1972	Takahashi et al.	148/189

1. A method of producing a semiconductor monocrystal composed of Group III-V compounds and having a p-conductive layer therein, comprising the steps of;

covering the surface of a monocrystal composed of a Group III-V compound with a protective layer composed of a material that allows Group III elements to diffuse therethrough and selected from the group consisting of silicon dioxide, aluminum oxide and mixtures thereof;

sealing the coated semiconductor monocrystal in an ampule containing a Group II element diffusion source and a gaseous atmosphere composed of about 80% by volume of hydrogen and about 20% by volume nitrogen; and

subjecting the coated semiconductor monocrystal to time-temperature conditions comprising heating the coated monocrystal at a temperature in the range of about 500° to 1,000° C. for a period of time ranging from about 1 to 5 hours whereby the Group III element of the Group III-V compound diffuses out of the monocrystal through the protective layer and the Group II element diffuses into the monocrystal through the protective layer.

B 351,348

PROCESS FOR DOPING SILICON SEMICONDUCTOR USING AN IMPREGNATED REFRACTORY DOPANT SOURCE

Doulatabad A. Venkatu, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Apr. 16, 1973, Ser. No. 351,348
Int. Cl. H01i *7/36*
U.S. Cl. 148—189 **16 Claims**
Group Art Unit 111

References Cited

UNITED STATES PATENTS

3,167,461	1/1965	Compton	148/175
3,374,125	3/1968	Goldsmith	148/189
3,530,016	9/1970	Joseph	148/189
3,644,154	2/1972	Hoogendoorn et al.	148/187
3,658,606	4/1972	Lyons et al.	148/187

OTHER PUBLICATIONS

Ceramic Industry Magazine, January 1967, p. 63, TP 785 C411.

1. In the process for doping a silicon semiconductor wherein a silicon semiconductor and a solid dopant source for vapor phase transport of an N-type dopant are maintained in vapor phase communication at a temperature and for a time sufficient to form a zone of N-type conductivity in said semiconductor, the improvement wherein said solid dopant source comprises a porous, inert, rigid, dimensionally stable, refractory support having a volume porosity in the range of about 3C percent to about 80 percent and an average pore size diameter of about 1 micron to about 10 microns, said support having been formed by compacting and sintering a refractory oxide powder, said support being impregnated with a dopant component comprising aluminum metaphosphate, arsenic oxide, or antimony oxide, said dopant component being present in the proportion of at least about 20 parts by weight of said support.

B 024,017

PROPELLANT WITH MIXED CARBOXYL POLYBUTADIENE AND CARBORANYL METHACRYLATE-BUTADIENE-ACRYLIC ACID TERPOLYMER AS BINDER

Chester W. Huskins, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 30, 1970, Ser. No. 24,017
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.2 **7 Claims**
Group Art Unit 223

References Cited

UNITED STATES PATENTS

3,183,216	5/1965	Cohen et al.	260/83.5
3,255,059	6/1966	Hamermesh et al.	149/19
3,301,836	1/1967	Green et al.	260/86.1
3,476,622	11/1969	Harada et al.	149/19
3,499,926	3/1970	Alexander et al.	149/22 X
3,535,174	10/1970	Bornstein	149/19

1. A propellant composition comprising a binder selected from the group consisting of a terpolymer constituted of the monomers consisting of carboranyl methacrylate in amounts from about 15 to about 75 percent by weight of said terpolymer, butadiene in amounts from about 10 to about 80 percent by weight of said terpolymer, and acrylic acid in amounts from about 2 to about 20 percent by weight of said terpolymer, said terpolymer in combination with carboxy-terminated polybutadiene and said terpolymer in combination with polybutadiene-acrylic acid copolymer; ammonium perchlorate oxidizer; and aluminum fuel.

B 287,164

PROPELLANT WITH VERY HIGH BURNING RATE ACRYLATE POLYMER BINDER AND NF PLASTICIZER

Marvin L. Jones, Cumberland, Md., and David W. Booth, Gurley, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 866,067, Sept. 30, 1969, abandoned. This application Sept. 12, 1972, Ser. No. 287,164
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.2 **7 Claims**
Group Art Unit 223

References Cited

UNITED STATES PATENTS

3,183,216	5/1965	Cohen et al.	260/83.5
3,254,096	5/1966	Dupont et al.	149/19 X
3,346,546	10/1967	Beach et al.	149/19 X
3,376,318	4/1968	Bieber et al.	260/347.7
3,406,203	10/1968	Marrow et al.	260/583
3,419,445	12/1968	Markels	149/19
3,439,039	4/1969	Petry et al.	260/584
3,441,550	4/1969	Zimmerman	260/89.5
3,476,622	11/1969	Harada et al.	149/19
3,549,707	12/1970	Stogryn	149/19 X

OTHER PUBLICATIONS

Zakharkin et al., "Zhurnal Obshchei Khimii," 36, No. 7, 1,285–1,290, (1966) (translation).

1. A solid propellant composition comprising: a mixture of an inorganic oxidizing salt selected from ammonium, alkali metal, and alkaline earth metal salts of nitric, perchloric, and chloric acids and mixtures thereof; an NF binder comprised of the plasticizer 1,2,3-tris(1,2-bis-difluoramino) ethoxy propane in combination with a material selected from a terpolymer of 2,3-bis(difluoramino) propyl acrylate, carboranyl methyl acrylate, and acrylic acid, or a copolymer of ethyl acrylate and acrylic acid with the added plasticizer, 1-isopropenylcarboranyl-acetone; and a dicyclo diepoxy carboxylate curing agent.

B 064,868

PROPELLANT WITH ACRYLATE COPOLYMER BINDER AND BUTANETRIOL TRINITRATE PLASTICIZER

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed July 24, 1970, Ser. No. 64,868
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.3 **9 Claims**
Group Art Unit 223

References Cited

UNITED STATES PATENTS

3,117,044	1/1964	Sauer	149/92 X
3,269,880	8/1966	Visnov et al.	149/92 X
3,507,721	4/1970	Nakagawa et al.	149/19.6

1. A propellant composition wherein comprising a binder of ethyl acrylate-acrylic acid copolymer; a curing agent of diepoxydicyclphexyl carboxylate; butanetriol trinitrate; an organic oxidizer selected from cyclotetramethylenetetranitramine and cyclotrimethylenetrinitramine; 1,2,3-tris-propane; carbon black additive; and ammonium perchlorate oxidizer.

B 078,331

SOLID PROPELLANTS WITH BIRADICAL BURNING RATE CATALYSTS

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sept. 1, 1970, Ser. No. 78,331
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.8 **8 Claims**
Group Art Unit 223

References Cited

UNITED STATES PATENTS

3,203,842	8/1965	Godfrey	149/76 X
3,364,086	1/1968	Oversohl et al.	149/76 X
3,400,025	9/1968	Hopper et al.	149/92 X
3,455,883	7/1969	Kamal et al.	260/77.5
3,476,622	11/1969	Harada et al.	149/19
3,498,856	3/1970	Harris	149/19
3,585,090	6/1971	Sayles	149/19

1. A solid propellant composition comprising a binder, an oxidizer, a burning rate catalyst selected from the biradical compounds consisting of p, p'-biphenylene-bis(diphenylmethyl) and p, p'-phenylene-bis(diphenylmethyl), and a crosslinking agent.

B 264,833

METHOD OF FABRICATING AN APERTURED MASK FOR A CATHODE-RAY TUBE

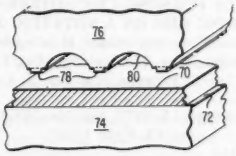
Harold Bell Law, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed June 21, 1972, Ser. No. 264,833
Int. Cl. C23f *1/02*
U.S. Cl. 156—3 **14 Claims**
Group Art Unit 161

References Cited

UNITED STATES PATENTS

2,565,623	8/1951	Parker	156/7
3,148,098	9/1964	Beste	156/6
3,666,579	5/1972	Dietch	156/16
3,679,500	7/1972	Kubo et al.	156/11



1. A method of fabricating an apertured mask for a cathode-ray tube comprising:

embossing a relief pattern on one side of a flat metal sheet with an embossing tool, said relief pattern providing regions of minimum thickness relative to the remaining regions thereof at intended aperture location and straight vertical sides perpendicular to the flat dimension of said sheet surrounding the intended aperture locations;

shaping said metal sheet into a desired mask contour;

masking the pattern side of said metal sheet with an etch-resistant material; and

etching the opposite side of said metal sheet until said regions of minimum thickness are etched through to provide apertures.

12. A method of fabricating an apertured mask for a cathode-ray tube comprising;

embossing a relief pattern on one side of a metal sheet comprising two laminated metal layers having a plurality of spaced parallel wires therebetween, said relief pattern providing regions of minimum thickness relative to the remaining regions thereof at intended aperture locations; shaping said metal sheet into a desired mask contour; and etching the opposite side of said metal sheet until said regions of minimum thickness are etched through to provide apertures.

B 361,265

METHOD OF ETCHING A SEMICONDUCTOR ELEMENT

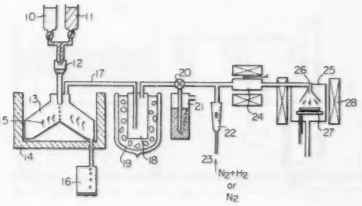
Takuhiro Ono, and Masafumi Hashimoto, 4896 Oza Ohtani, both of Kawasaki, Japan

Filed May 17, 1973, Ser. No. 361,265
Claims priority, application Japan, May 18, 1972, 47-49612
Int. Cl. H01l *5/00*
U.S. Cl. 156—17 **7 Claims**
Group Art Unit 161

References Cited

FOREIGN PATENTS OR APPLICATIONS

200,890 1/1966 Sweden



1. A method of gas-etching, which comprises applying and etching gas composed of NOCl and Cl_2, which is generated through the reaction of HCl and HNO_3, onto a semiconductor substrate while maintaining the temperature of said semiconductor substrate at a predetermined temperature above the boiling point of up to 400° C.

B 176,995
METHOD OF MAKING ISOCYANATE-BASED FOAM-FILLED PANELS

Olle Bengtson, Goteborg, Sweden, assignor to Imperial Chemical Industries Ltd., London, England

Filed Sept. 1, 1971, Ser. No. 176,995
Claims priority, application Sweden, Sept. 7, 1970, 12085/70
Int. Cl. B32b *5/18;* **B29g** *7/02;* **B29h** *7/20;* **B29d** *27/00*
U.S. Cl. 156—79 **12 Claims**
Group Art Unit 164

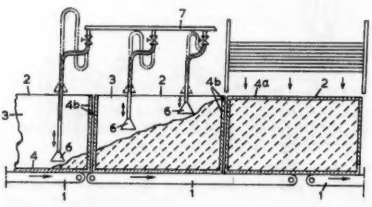
References Cited

UNITED STATES PATENTS

2,586,275	2/1952	Toulmin	161/159
3,027,040	3/1962	Jodell et al.	156/79
3,062,698	11/1962	Aykanian	156/322
3,099,518	7/1963	Wetzler	156/79
3,139,369	6/1964	Sullivan et al.	264/45
3,152,361	10/1964	Edwards	264/54 X
3,166,454	1/1965	Voelker	156/78
3,214,793	11/1965	Vidal	264/51 X
3,216,849	11/1965	Jacobs	264/47
3,233,576	2/1966	Voelker	156/79
3,325,823	6/1967	Boon	264/54 X
3,354,503	11/1967	Joseph et al.	264/54 X
3,446,692	5/1969	Turnbull	161/69
3,524,825	8/1970	Rill	161/190
3,562,985	2/1971	Nicosia	161/190
3,657,036	4/1972	Mullenhoff et al.	264/47
3,812,227	5/1974	Blackwell et al.	264/54
R24,767	1/1960	Simon et al.	156/79

OTHER PUBLICATIONS

"Frothing" – Chem. Engin. Progress, Oct. 1961, Vol. 57, No. 10, pp. 40–41.



1. A process for the continuous manufacture of thin isocyanate-based foam-filled panels which comprises support and longitudinally conveying two sheets of facing material each in a vertical plane and at a distance apart which is less than the depth of the said sheets, providing a base member adjacent to the lower edges of the sheets thereby defining together with the sheets a continuous cavity, passing the sheets so conveyed past a plurality of stationary points of delivery of isocyanate-based foam-forming ingredients, the said points being located within the cavity between the sheets in longitudinally spaced relationship and at successively increasing distances from the base member with respect to the direction of motion of the sheets, and discharging into the cavity from each of the said delivery points a mixture of isocyanate-based foam-forming ingredients containing at least one blowing agent to form a layer of froth occupying at least 10% of the final expanded volume of the foam immediately following discharge of the mixture, and adjusting the reactivity of the foam-forming ingredients and the rate of passage of the cavity-defining members relative to the delivery points so that successive layers of froth delivered from adjacent delivery points just integrate at the interface between said layer so as to form a substantially homogeneous foam throughout the cavity.

B 329,612
PROCESS FOR RETREADING A VEHICLE TYRE

Bruno Edler, Mur A-8600 Bruck a.d., Austria

Division of Ser. No. 52,861, July 7, 1970. Pat. No. 3,738,893.
This application Feb. 5, 1973, Ser. No. 329,612
Int. Cl. B29h *5/04, 5/16, 17/36*
U.S. Cl. 156—96 **14 Claims**
Group Art Unit 161

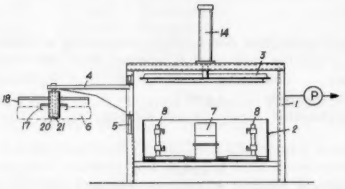
References Cited

UNITED STATES PATENTS

1,455,260	5/1923	Midgley	156/394
2,966,936	1/1961	Schelkmann	156/96
3,236,709	2/1966	Carver	156/96
3,283,795	11/1966	Schelkmann	156/96
3,332,820	7/1967	Porter	156/394

FOREIGN PATENTS OR APPLICATIONS

92,699	6/1959	Netherlands	156/394 FM
1,068,458	11/1959	Germany	18/6 T



1. A process for retreading a vehicle tyre comprising the steps of:

a. positioning a closed tread band and a tyre to be retreaded within a vessel with the tread band loosely surrounding the tyre and spaced out of contact with the tyre by an intervening open space;

b. sealing the vessel;

c. maintaining said tread band and tyre spaced apart while reducing the pressure in the interior of the vessel, including said space between said tread band and tyre;

d. thereafter moving said tread band and tyre into contact and eliminating said space therebetween while maintaining said reduced pressure; and

e. affixing together the contacting tread band and tyre.

B 288,638
METHOD OF FORMING CIRCUMFERENTIALLY EXTENDING RIBS ON A ROTATING SHELL

David H. Bartlow, Cedartree Manor, Huntingdon, Pa. 16652; Bernard Howard Jones, 426 Seawright Dr., Pendleton, S.C. 29670, and Lee E. Pearson, R.R. No. 2, Granville, Ohio 43023

Filed Sept. 13, 1972, Ser. No. 288,638
Int. Cl. B32b *17/04*
U.S. Cl. 156—161 **8 Claims**
Group Art Unit 164

References Cited

UNITED STATES PATENTS

2,785,442	3/1957	Boggs	161/DIG. 4
3,083,864	2/1963	Young	161/DIG. 4
3,112,234	11/1963	Krupp	156/173 X
3,134,704	5/1964	Modigliani	156/167
3,202,560	8/1965	Michael	156/289 X
3,412,891	11/1968	Bastone et al.	156/171 X
3,464,879	9/1969	Poulsen	156/425
3,700,512	10/1972	Pearson et al.	156/171 X

1. A method of installing glass fiber mat over the sloping surface of an envelope which extends around an axis of revolution, said sloping surface sloping inwardly obliquely toward

said axis of revolution, said method comprising: causing said envelope to revolve about said axis of revolution, feeding a mat strip over said sloping surface of said envelope, feeding individual strands to said revolving sloping surface to become wound thereon, said strands being fed generally tangentially under tension over the external surface of said mat in a plane generally normal to said axis of revolution, and causing the tension on said strands to pull said mat down onto said sloping surface of said envelope and then slide obliquely sideways and inwardly toward said axis of revolution over said mat to automatically smooth said mat onto said obliquely sloping surface before said strands assume their final positions on said form.

7. A method of producing a glass fiber reinforced plastic shell having an external stiffening rib thereon, comprising: rotating a generally horizontal cylindrical mandrel about its longitudinal axis, applying a coating of resin and glass fiber shell forming materials onto the surface of the mandrel, feeding a band of strands generally tangentially to the bottom of the cylindrical mandrel over the shell forming materials and causing the strands to be pulled thereon by the mandrel, feeding a mat of glass fibers to the mandrel on top of the strands, wetting the mat and strands with resin, feeding a form having a cross section that is an isosceles trapezoid having its short parallel side resting on the mat, said band of strands having portions directly beneath the sloping sides of the form, and tensioning the strands to cause strands on opposite sides of the top to bring the mat against the sloping sides of the form and thereafter slide down the sloping sides of the mat to smoothen the mat and with the strands coming to rest on the portions of the mat which engage the shell forming materials.

8. A method producing a glass fiber reinforced plastic rib on the revolving surface of a glass fiber reinforced plastic shell comprising: feeding a rib form strip having a generally flat base and sloping sides onto the revolving surface with the base adjacent the surface to cause the strip to wrap around the surface, concurrently feeding a mat strip over the outer surface of the rib form, and feeding individual strands to the revolving surface to become wound thereon, wetting the mat and strands with resin, said strands being fed generally tangentially under tension to the revolving surface at locations outwardly of the mat and sloping sides of the rib form, and causing the tension on the strands to pull the mat down onto the sloping sides of the rib form and then slide over the mat to come to rest on the revolving surface at the foot of the rib form, and whereby the mat is automatically smoothed onto the rib form.

B 302,836

METHOD AND APPARATUS FOR CONSTRUCTION OF A SPIRALLY GENERATED STRUCTURE

Robert A. Hay, II, 5702 Highland, Midland, Mich. 48640

Filed Nov. 1, 1972, Ser. No. 302,836

Int. Cl. B31c *13/00*; **B29c** *23/00*

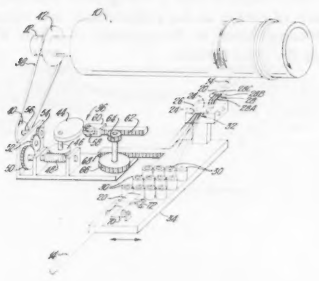
U.S. Cl. 156—192 **6 Claims**

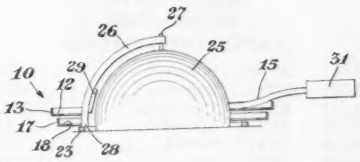
Group Art Unit 161

References Cited

UNITED STATES PATENTS

2,154,333	4/1939	Kampfer	156/244
3,337,384	8/1967	Wright	156/180
3,352,525	11/1967	Lowes	264/32
3,358,325	12/1962	Chisholm	52/80
3,365,855	1/1968	Vermette	52/80
3,372,430	3/1968	Lowes	425/60
3,376,602	4/1968	Lowes	425/60
3,412,426	11/1968	O'Dell, Jr.	52/80
3,507,735	4/1970	Chisholm	156/500
3,590,448	7/1971	Bryant	52/80
3,616,070	10/1971	Lemelson	156/244





1. In a method for the fabrication of a spirally generated structure wherein a strip of structural material is deposited successively in a plurality of turns, and adjacent turns bonded to each other to form a unitary structure by means of a material depositing head moving in a generally helically spiral pattern, the improvement which comprises

providing a first generally endless conveyor disposed about at least a portion of the structure,

providing a second conveyor within said first conveyor and the second conveyor being generally co-extensive therewith,

providing to one conveyor a first strip of structural material having a length at least about one quarter the length of the conveyor,

passing the first strip to the depositing head

supplying a second strip of structural material to the remaining conveyor, and subsequently

passing the second strip to the depositing head and

providing another strip to replace the first strip on the one conveyor.

6. An appartus suitable for handling elongate strip-like materials useful for the preparation of a spirally generated structure, the apparatus comprising

a first conveyor of generally circular closed cell configuration having an upwardly facing material receiving surface,

a second conveyor disposed within the first conveyor and of generally like configuration to the first conveyor and having a generally upwardly facing material receiving surface, the material receiving surfaces of the first and second conveyors being generally composed of a plurality of rolls, the material receiving surface of the second conveyor being displaced below the surface of the first conveyor by a distance approximating the thickness of strip-like material to be handled.

B 384,499

METHOD OF MAKING LAMINATES OF SUPPORT MATERIAL AND FLUORINATED POLYMER CONTAINING PENDANT SIDE CHAINS CONTAINING SULFONYL GROUPS

Walther Gustav Grot, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 196,772, Nov. 8, 1971, Pat. No. 3,770,567. This application Aug. 1, 1973, Ser. No. 384,499

Int. Cl. B32b *7/04, 17/04, 27/06*

U.S. Cl. 156—213 **4 Claims**

Group Art Unit 161

References Cited

UNITED STATES PATENTS

2,393,967	2/1946	Brubaker	260/92.1
2,773,781	12/1956	Rodman	161/189 X
3,041,317	6/1962	Gibbs et al.	260/79.3 MU
3,501,360	3/1970	Mancel	156/153
3,676,290	7/1972	Hetrick	161/189
3,692,569	9/1972	Grot	117/138.8 UF
3,718,627	2/1973	Grot	260/79.3 MU
3,723,234	3/1973	MacDonald	161/89
3,784,399	1/1974	Grot	117/62.1

1. A process for preparing a laminate of a first layer of fluorinated polymer containing pendant side chains containing sulfonyl groups wherein the sulfonyl groups are in the $-(SO_3)_nMe$ form wherein Me is a metallic cation or NH_4 and n is the valence of Me and a second layer of fluorinated polymer containing pendant side chains containing sulfonyl groups wherein the sulfonyl groups are in the $-SO_2M$ form wherein M is a halogen atom, said second layer being integral with said first layer and containing support material completely encapsulated therein which comprises

1. contacting the $-SO_2M$ surface of a film of a fluorinated polymer containing pendant side chains containing sulfonyl groups wherein the sulfonyl groups of one surface of said film are in the $-SO_2M$ form wherein M is a halogen atom and the sulfonyl groups of the other surface of the film are in the $-(SO_3)_nMe$ form wherein Me is a metallic cation or NH_4 and n is the valence of Me with a support material, and
2. applying a differential pressure to the contacted support material and film, the pressure on the opposite surface of the support material from that which is contacting said fluorinated polymer film being at least 5 inches of mercury less than the pressure on the surface of the fluorinated polymer film opposite to that contacting the support material, for a sufficient period of time to cause the support material which is in contact with said film to become completely encapsulated within the film of fluorinated polymer while heating the film and support material at from 240°–320°C.

B 251,109

BONDING METALS TO ELASTOMER SYSTEMS UTILIZING NITROGENOUS TREATED FURNACE BLACKS

Peter Aboytes, Borger, Tex., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation-in-part of Ser. No. 90,810, Nov. 18, 1970, Pat. No. 3,676,256. This application May 8, 1972, Ser. No. 251,109

Int. Cl. B32b *15/06;* **B44d** *1/34;* **C08c** *11/18*

U.S. Cl. 156—306 **1 Claim**

Group Art Unit 161

References Cited

UNITED STATES PATENTS

2,522,137	9/1950	Schaffer	161/222 X
2,635,975	4/1953	Peters	161/222
2,960,426	11/1960	O'Mahoney	156/306 X
3,184,290	5/1965	Jordan	106/307 X
3,301,694	1/1967	Kraus et al.	106/307
3,336,148	8/1967	Gunnell et al.	106/307
3,398,009	8/1968	Deery	106/307
3,523,812	8/1970	Kraus	106/307
3,565,657	2/1971	Dannenberg et al.	106/307

1. A method for producing an improved adhesive bond between rubber vulcanizates and a brass surface comprising adding at least 10 parts by weight of a furnace carbon black which has been oxidized with a nitrogenous oxidizing agent per 100 parts of rubber in the composition, and vulcanizing the rubber composition in the presence of sulfur while in contact with the brass surface.

B 251,635

BONDING METALS TO ELASTOMER SYSTEMS UTILIZING HALOGEN TREATED FURNACE BLACKS

Peter Aboytes, Borger, Tex., assignor to J. M. Huber Corporation, Locust, N.J.

Continuation-in-part of Ser. No. 90,810, Nov. 18, 1970, Pat. No. 3,676,256. This application May 8, 1972, Ser. No. 251,635

Int. Cl. B32b *15/06;* **B44d** *1/34;* **C08c** *11/18*

U.S. Cl. 156—306 **1 Claim**

Group Art Unit 161

References Cited

UNITED STATES PATENTS

2,522,137	9/1950	Schaffer	161/222 X
2,635,975	4/1953	Peters	161/222
2,641,533	6/1953	Cines et al.	106/307 X
2,960,426	11/1960	O'Mahoney	156/306 X
3,140,192	7/1964	Jordan et al.	106/307
3,485,791	12/1969	Callan et al.	260/41.5

1. A method for producing an improved adhesive bond between rubber vulcanizates and a brass surface comprising adding at least 10 parts by weight of a furnace carbon black which has been modified by treatment with a compound selected from the group consisting of halogens and oxyhalogens, per 100 parts of rubber in the composition, and vulcanizing the rubber composition in the presence of sulfur while in contact with the brass surface.

B 287,275

MACHINES FOR MANUFACTURING PNEUMATIC TIRES, IN PARTICULAR RADIAL TIRES

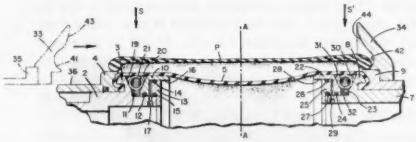
Renato Caretta, Varese, Italy, assignor to Industrie Pirelli S.P.A., Milan, Italy

Filed Sept. 8, 1972, Ser. No. 287,275
Claims priority, application Italy, Sept. 14, 1971, 28578/71
Int. Cl. B29h *17/16*
U.S. Cl. 156—416 1 Claim
Group Art Unit 161

References Cited

UNITED STATES PATENTS

1,405,470	2/1922	Wheatley	156/123
1,654,351	12/1927	Steinle	156/123
3,017,919	1/1962	McMahon et al.	156/400
3,047,450	7/1962	Drakeford et al.	156/415
3,107,192	10/1963	McNenney	156/416
3,433,695	3/1969	Caretta	156/415
3,580,766	5/1971	Pacciarini et al.	156/123
3,580,782	5/1971	Leblond	156/415
3,607,558	9/1971	Neboot	156/415
3,674,604	5/1972	Gazoit	156/415



1. An expansible type drum machine for building pneumatic tires comprising

two shoulders to support the carcass zones concerned with the bead cores, said shoulders being movable relative to each other in an axial direction;

means for admitting a fluid under pressure inside the drum during the shaping of the carcass;

a helical spring, for each drum shoulder, closed as a ring and mounted under tension, each of said drum shoulders defining a groove of conical surfaces, facing each other, and being formed of two elements forming a part of the corresponding drum shoulder, said elements slidable axially relatively to each other so as to vary the width of said groove and cause the expansion and the contraction of the helical spring, and

two bells, facing each other and having an inner profile axially narrower than that of the freely shaped carcass, said bells extending radially for a portion of the height of the section of the completely shaped carcass, and abutting the carcass sides on the inner profiles thereof during the shaping of the carcass.

B 311,313

METHOD OF AND APPARATUS FOR BIAS LAYING

Charles A. Lee, and Warren R. Furbeck, both of Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Continuation-in-part of Ser. No. 95,756, Dec. 7, 1970, Pat. No. 3,715,255. This application Dec. 1, 1972, Ser. No. 311,313
Int. Cl. B65h *81/00*
U.S. Cl. 156—425 10 Claims
Group Art Unit 161

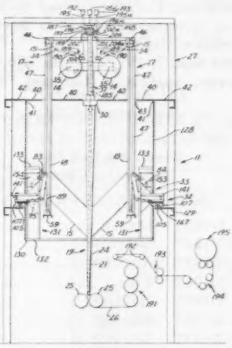
References Cited

UNITED STATES PATENTS

2,880,781	4/1959	Carlson	156/494 X
3,263,512	8/1966	Handley	74/54
3,510,382	5/1970	Wideman et al.	156/425

FOREIGN PATENTS OR APPLICATIONS

283,046	1/1928	Great Britain	156/422 X



1. An apparatus for generally helically winding at least one web into a tube and for flattening the tube to form a multi-ply bias-laid ribbon, said apparatus comprising:

a carrier rotatable in a circular path about a vertical axis, means for supporting and carrying at least one parent web roll in a circular path about said axis and in a horizontal plane and from which a web travels forwardly, a vertically extending mandrel centered on said vertical axis and having horizontally spaced areas for contacting and for carrying said web vertically and at a substantially constant speed to discharge continually as a tube, folding bar means on said carrier movable in a circular path and at a fixed radial distance from said axis guiding said web and discharging the web to each of said mandrel areas at a predetermined angle, said folding bar means traveling from positions closely adjacent each of said horizontally spaced mandrel areas outwardly therefrom for a predetermined arcuate extent and then traveling inwardly toward the other of said spaced mandrel areas to positions closely adjacent to said other mandrel areas, means for shifting said folding bar means to ascend and descend relative to said mandrel and to said carrier during said circular path rotation of said carrier and said folding bar means to provide a substantially uniform travel of said web onto said mandrel and vertically along said mandrel and means for removing said tube from said mandrel and for flattening said tube into a multi-ply bias-laid ribbon.

7: An apparatus for generally helically winding at least one web into a tube and for flattening the tube to form a multi-ply bias-laid ribbon, said apparatus comprising:

a carrier rotatable about a vertical axis and carrying at least one parent web roll from which a web travels forwardly, a vertically extending mandrel having horizontally spaced

areas for contacting and for carrying said web vertically and at a substantially constant speed, folding bar means on said carrier for guiding said web and for discharging the web to the mandrel at a predetermined angle, means for shifting said folding bar means vertically relative to said mandrel during rotation of said carrier to provide a substantially more uniform travel of said web onto and vertically along said mandrel, said means for shifting said folding bar means comprising a cam ring disposed in a horizontal plane and a cam follower means for converting horizontal displacements by said cam ring into vertical displacements of said folding bar means, said folding bar means comprising a slide mounted on said carrier for rectilinear vertical movement and a folding bar carried by said slide for movement therewith vertically.

B 286,913

STITCHED WEBS OF FLEECES OF SYNTHETIC FIBERS AND METHOD OF MAKING SAME

Martin Wandel; Manfred Salamon, both of Dormagen; Gotz Gotmar Dornheim, Leichlingen, and Bernard Kuhlman, Rheydt, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 7, 1972, Ser. No. 286,913

Claims priority, application Germany, Sept. 7, 1971, 7133997

Int. Cl. B32b *7/08, 3/28;* **E02b** *3/12*

U.S. Cl. 161—50 **10 Claims**

Group Art Unit 164

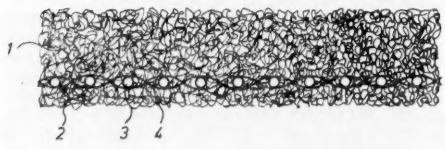
References Cited

UNITED STATES PATENTS

1,742,775	1/1930	Mallay	161/50 X
2,433,270	12/1947	Goldman	161/50 X
2,719,803	10/1955	Nottebohm	161/50
3,035,329	5/1962	Cole	28/77 X
3,047,444	7/1962	Harwood	161/128
3,177,275	4/1965	Brenner	161/DIG. 4
3,576,701	4/1971	Salamon et al.	161/50

FOREIGN PATENTS OR APPLICATIONS

1,137,864	12/1968	Great Britain	61/38



1. An erosion preventing structural element in the form of a stitched web of fleece of coarse, crimped fibres, consisting of a web of fleece produced from

a. crimped polyamide fibres of dtex 5 to 250 and staple length 20 to 150 mm stitched with 60 to 180 stitches per cm^2,

b. a mesh fabric of synthetic endless yarns stitched into the fleece, the fabric having at least 2 warp yarns and 2 weft yarns per cm^2 and being arranged in the lower third of the web of fleece, and

c. a waterproof binder based on polyacrylic acid ester of at least 15% by weight, this web of fleece having a thickness of 4 to 10 mm and a weight per m^2 of between 500 and 2000 g.

3. A process for the production of erosion preventing structural elements in the form of webs of stitched fleeces of synthetic fibres, which comprises laying crimped polyamide staple fibres of dtex 5 to 250 to form a fleece, stitching together the formed fleece and a mesh fabric, impregnating the resultant combination with a waterproof binder based on polyacrylate and subjecting the impregnated fleece to a heat treatment at temperatures of between 100° and 150°C.

B 342,084

PILE CARPET AND A PROCESS FOR ITS MANUFACTURE

Ruedi Reinhard, Guger, 4917, Melchnau, Switzerland

Filed Mar. 16, 1973, Ser. No. 342,084

Claims priority, application Switzerland, Mar. 23, 1972, 4350/72

Int. Cl. D03d *27/00;* **D04h** *11/00*

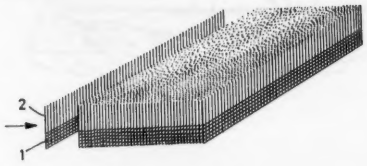
U.S. Cl. 161—67 **6 Claims**

Group Art Unit 164

References Cited

UNITED STATES PATENTS

3,174,451	3/1965	Heiks	112/410



1. A pile carpet having a pile perpendicular to a base and including textile yarn wherein the base comprises woven fabric strips abutting each other by their lateral areas and being connected to one another, said strips standing upright on edge on one of their edges, and wherein the pile comprises free, unbound ends of said yarn running perpendicularly to said base in said fabric strips, said free ends projecting beyond the other edges of said fabric strips.

4. A process for manufacturing a pile carpet having a pile layer perpendicular to a base and including textile yarn and in which the base comprises woven fabric strips abutting each other by their lateral areas and being connected to one another, said strips standing upright on edge on one of their edges, and wherein the pile layer comprises free, unbound ends of said yarn running perpendicularly to said base in said fabric strips, said free ends projecting beyond the other edges of said fabric strips, comprising the steps of cutting a fabric web, having warp threads in groups so spaced that the weft threads float between said warp thread groups, in the warp direction into strips including a part of woven fabric and a part of unbound free ends of weft threads extending over each strip's entire length, placing said strips upright on edge, and bonding the lateral areas of the woven parts of said strips so that the woven parts will result in the base and the free ends of weft threads in the pile of the carpet.

B 306,938

POLYURETHANE SANDBLAST STENCIL

George A. Kurhajec, North Oaks, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 15, 1972, Ser. No. 306,938
Int. Cl. B24b *1/00*
U.S. Cl. 161—167 **8 Claims**
Group Art Unit 164

[56] **References Cited**

UNITED STATES PATENTS

3,201,136	8/1965	Harrison et al.	260/77.5 AB
3,492,255	1/1970	Cobbledick	260/18 TN
3,579,926	5/1971	Gaspari	51/312
3,583,945	6/1971	Robins	260/77.5 AB
3,592,787	7/1971	Robins	260/37 N
3,714,110	1/1973	Verdol et al.	260/37 N

FOREIGN PATENTS OR APPLICATIONS

757,807	5/1967	Canada

1. In a laminar sandblast stencil sheet of the type comprising a filled self-supporting rubbery layer having a first pressure-sensitive adhesive layer on one side, the improvement wherein said filled rubbery layer is a polyurethane reaction product of components comprising (1) a mixture of polyols and polyisocyanates having an OH:NCO ratio in the range of about 1.0 to 1.2, and (2) a particulate kaolin filler, said filler constituting about 1/5 to about ⅓ the volume of said rubbery layer said reaction product having an elongation at break on the order of 100 – 1000 percent, a tensile strength of 5 – 40 pounds per inch width, a tear resistance of 1.0 – 4.0 pounds, a Shore A-2 hardness of 30–75, .9 – 1.8 urethane groups per 1000 grams of the polyurethane portion of said reaction product, and a molecular weight between urethane-containing crosslinks in the approximate range of 2000 to 10,000.

6. The stencil sheet of claim **1** wherein a polymeric film is adhered to the exposed surface of said first pressure-sensitive adhesive layer and a second pressure-sensitive adhesive layer overlies said film, said second pressure-sensitive adhesive layer being protectively covered by a removable release liner.

B 237,953

ORIENTED SARAN COEXTRUDATE

Glenn C. Wiggins, Midland; Marvin J. Kreh, Essexville, and Robert S. Davis, Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 70,524, Sept. 8, 1970, abandoned, which is a continuation of Ser. No. 630,889, April 14, 1967, abandoned. This application Mar. 24, 1972, Ser. No. 237,953
Int. Cl. B32b *27/08, 27/30, 27/32*
U.S. Cl. 161—254 **3 Claims**
Group Art Unit 164

References Cited

UNITED STATES PATENTS

3,278,663	10/1966	Graham	264/95
3,340,091	9/1967	Zweig	117/138.8
3,387,640	6/1968	Butler	150/7
3,445,324	5/1969	Curler et al.	161/165
3,524,795	8/1970	Peterson	161/254
3,616,191	10/1971	Fuerholzer et al.	161/252
3,647,485	3/1972	Seiferth et al.	161/252
3,650,775	3/1972	Simon et al.	99/174
3,682,767	8/1972	Britton et al.	161/227
3,698,979	10/1972	Gifford et al.	156/244
3,707,590	12/1973	Wiggins	161/252
3,741,253	6/1973	Brax et al.	138/137

FOREIGN PATENTS OR APPLICATIONS

713,477	7/1965	Canada	161/252

1. A bilaterally oriented plastic laminate consisting essentially of (1) a first layer of a vinylidene chloride-vinyl chloride copolymer containing a predominant amount of vinylidene chloride in the copolymer molecule and (2) a second layer of ethylene-unsaturated ester type copolymer containing a predominant amount of ethylene in the copolymer molecule and wherein said unsaturated ester is selected from the group consisting of vinyl acetate and isobutyl acrylate, said first layer and said second layer being non-separable with tape and said laminate being prepared by coextruding said first layer and said second layer as a plural layered tube, chilling said tube at a temperature of about 5°C to about 25°C and then tempering said tube at a temperature of about 20°C to about 50°C immediately prior to blowing said tube into a bubble with a fluid whereby the molecules of said copolymer are bilaterally oriented and wherein the total area of said bubble is at least about 16 times the area of said tube.

3. The laminate of claim **1** with a further layer of said ethylene-unsaturated ester type copolymer.

B 392,732

PAPERMAKING MACHINE HEADBOX SLICE OPENING ADJUSTING SCREWS

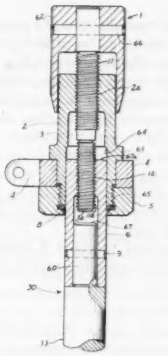
Kenneth Ray Batcher, Cumberland, Md., assignor to Westvaco Corporation, New York, N.Y.

Filed Aug. 29, 1973, Ser. No. 392,732
Int. Cl. D21f *1/02*
U.S. Cl. 162—347 **5 Claims**
Group Art Unit 173

References Cited

UNITED STATES PATENTS

3,463,701	8/1969	Curtis	162/347
3,575,799	4/1971	Gedemer et al.	162/347 X



1. An apparatus for adjusting the separation distance between upper and lower slice lips of a paper machine headbox, said upper slice lip being pivotally secured to said headbox, said apparatus comprising:

a rod element pivotally secured at one end thereof to said upper slice lip for movement about an axis parallel with said upper slice lip length, the other end of said rod provided with first and second abutment surfaces and a first screw thread having a first thread lead disposed about the axis of said rod element;

an axially extended spindle element having at one end thereof an abutment surface cooperative with said first rod abutment surface and a second screw thread cooperatively engageable with said first screw thread disposed about the axis of said spindle, the other end of said spindle element provided with a third screw thread having a second thread lead disposed about said spindle axis;

a headbox mounting element having a journal element for pivotal attachment to said headbox about an axis parallel with said upper slice lip length, an abutment surface

cooperative with said second rod abutment surface and a fourth screw thread cooperative with said third screw thread; and

rotational drive means secured to said spindle element for turning said spindle element in either rotational direction about said spindle axis whereby rotation of said drive means in one direction axially displaces said rod element to increase the distance between the rod element slice lip pivot and said headbox mounting journal element and rotation of said drive means in the other direction displaces said rod element to decrease said distance.

B 266,195

PROCESS FOR PREPARING PLANT ENZYME PREPARATIONS OF LOW GERM CONTENT

Hans Hess, Im Gerstenacker 8, Binningen; Guenther Mueller, Baselstrasse 19, Arlesheim, and Xaver Buehlmann, Hirzbrunnenstrasse 10, Basle, all of Switzerland

Filed June 26, 1972, Ser. No. 266,195

Claims priority, application Switzerland, July 5, 1971, 9831/71

Int. Cl. C12d *1/00*; **C07g** *7/022*

U.S. Cl. 195—66 R **13 Claims**

Group Art Unit 172

References Cited

UNITED STATES PATENTS

2,958,632	11/1960	Schwarz et al.	195/60

FOREIGN PATENTS OR APPLICATIONS

963,759	7/1964	Great Britain	195/63
1,124,262	8/1968	Great Britain	424/350

1. A process for the manufacture of a plant enzyme preparation of papain, ficin or bromelin of low germ content, which in comparison to unpurified corresponding enzyme displays a practically unchanged enzyme activity, wherein said contaminated plant enzyme preparation is processed with a stabilized emulsion of a halogenated hydrocarbon with a boiling point between 15°C and 100°C, with or without a cellulose derivative, to form a plastic mass which is dried in known manner.

5. A Process according to claim **5**, wherein a halogenated hydrocarbon with a boiling point between 30°C and 60°C.

6. A process according to claim **5** wherein methylene chloride or chloroform is used.

8. A process according to claim **5**, wherein the emulsion contains a cellulose derivative in order to stabilize or thicken it.

B 331,417

PREPARATION OF ANTIBIOTICS BY FERMENTATION

Edward O. Stapley, Metuchen, N.J., and Justo M. Mata, Madrid, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. Nos. 19,496, March 13, 1970, abandoned, and Ser. No. 51,319, June 30, 1970, abandoned, and Ser. No. 203,896, Dec. 1, 1971. This application Feb. 12, 1973, Ser. No. 331,417

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **6 Claims**

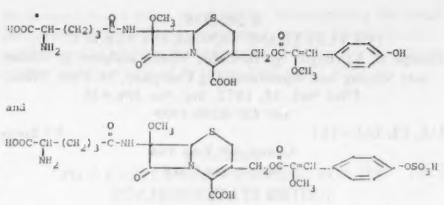
Group Art Unit 172

References Cited

UNITED STATES PATENTS

3,801,464	4/1974	Gorman et al.	195/80

1. A method for the preparation of a mixture of antibiotics having the following formulas:



and

which comprises growing in an aqueous nutrient medium under aerobic conditions a Streptomyces capable of producing the desired mixture.

2. The method of claim **1** wherein the Streptomyces is a strain of *Streptomyces griseus, Streptomyces viridochromogenes, Streptomyces fimbriatus, Streptomyces halstedii, Streptomyces rochei, Streptomyces cinnamonensis* or *Streptomyces chartreusis*.

B 367,661

ANTIBIOTIC PRODUCTION

Edward O. Stapley, 110 Highland Ave., Metuchen, N.J. 08840, and Justo M. Mata, Calle de Cea Bermudez 10, Madrid, Spain

Filed June 6, 1973, Ser. No. 367,661

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **10 Claims**

Group Art Unit 172

References Cited

UNITED STATES PATENTS

3,116,222	12/1963	Rao et al.	195/80 R
3,801,464	4/1974	Gorman et al.	195/80 R

1. A method of producing an antibiotic mixture comprised of cephamycin C and toyocamycin which method comprises cultivating a cephamycin C and toyocamycin producing strain of *Streptomyces albogriseolus* in a culture medium containing assimilable sources of carbon and nitrogen under aerobic conditions until a substantial amount of said antibiotics are produced by said organism in the culture medium.

2. The method of claim **1** wherein the organism is *Streptomyces albogriseolus* NRRL 5735.

5. A method of producing the antibiotic cephamycin C which method comprises cultivating a cephamycin C producing strain of *Streptomyces albogriseolus* in a culture medium containing assimilable sources of carbon and nitrogen under aerobic conditions until a substantial amount of said antibiotic is produced by said organism in the culture medium.

8. A method of producing the antibiotic toyocamycin which method comprises cultivating a toyocamycin producing strain of *Streptomyces albogriseolus* in a culture medium containing assimilable sources of carbon and nitrogen under aerobic conditions under a substantial amount of said antibiotic is produced by said organism in the culture medium.

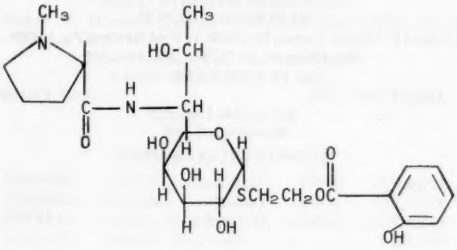
B 424,462
COMPOSITION OF MATTER AND PROCESS

Alexander D. Argoudelis, Portage; John H. Coates, and Oldrich K. Sebek, both of Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 215,119, Jan. 3, 1972, Pat. No. 3,817,979. This application Dec. 13, 1973, Ser. No. 424,462
Int. Cl. C12d 9/00
U.S. Cl. 195—80 R 3 Claims
Group Art Unit 172

References Cited
UNITED STATES PATENTS
2,928,844 3/1960 DeBoer et al. 195/80

1. A process for preparing 7-0-demethylcelesticetin having the structural formula:



which comprises cultivating *Streptomyces caelestis* strain 22227a, having the cultural characteristics of culture deposit NRRL 5320, in an aqueous nutrient medium under aerobic conditions until substantial antibiotic activity is imparted to said medium by the production of 7-0-demethylcelesticetin.

3. A process according to claim 1 wherein said produced 7-0-demethylcelesticetin is isolated from the fermentation medium by a process which comprises:

a. filtering the fermentation whole broth to obtain filtered beer;
b. passing the filtered beer over a resin comprising a non-ionic macro porous copolymer of styrene crosslinked with divinylbenzene;
c. eluting said resin with a solvent selected from the group of organic or aqueous organic solvents in which 7-0-demethylcelesticetin is soluble to obtain eluates; and
d. subjecting said eluates to chromatographic procedures to recover 7-0-demethylcelesticetin.

B 380,141
FECAL STREPTOCOCCI SPECIATING MEDIA

Mary M. Galvani, 540 Mississippi River Blvd., St. Paul, Minn. 55116

Filed July 18, 1973, Ser. No. 380,141
Int. Cl. C12k 1/10
U.S. Cl. 195—100 8 Claims
Group Art Unit 172

References Cited
OTHER PUBLICATIONS
Difeo Manual, pages 46–52, 9th Edition, 1953.

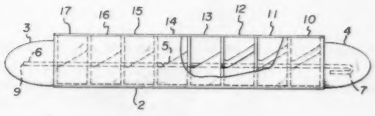
1. A fecal streptococci speciating media consisting of a mixture of Peptone, Esculin, Ferric Ammonium Citrate Sodium Azide and Bacteriological Gelatin having a pH of 6.8.

B 400,080
DIAGNOSTIC DEVICE

Thomas Cekoric, Jr., Hopatcong, and Patrick Michael Yananton, Garfield, both of N.J., assignors to Hoffmann-LaRoche, Inc., Nutley, N.J.

Division of Ser. No. 256,984, May 25, 1972, Pat. No. 3,784,448. This application Sept. 24, 1973, Ser. No. 400,080
Int. Cl. C12k 1/04
U.S. Cl. 195—103.5 R 6 Claims
Group Art Unit 172

References Cited
UNITED STATES PATENTS
3,205,151 9/1965 Landau et al. ..... 195/103.5 R
OTHER PUBLICATIONS
Enterotube Pamphlet, Hoffmann–LaRoche Inc., April 1970.



1. A method for innoculating and insuring the biochemical reaction of a test media contained in compartments of a tubular member of a disposable diagnostic device, said disposable device including an innoculation member extending longitudinally through the tubular member via axially aligned openings contained in the walls which define said compartments, said innoculation member including a handle end and an innoculation end; at least one of such compartments containing a media which biochemically reacts under anaerobic conditions, any such last-mentioned compartment being disposed sequentially adjacent to one end of the tubular member which method comprises contacting said innoculation end with isolates obtained from a specimen sample, pulling on said handle end whereby said innoculation member is withdrawn from said tubular member and said innoculation end passes through and hence, contacts all of said test media and permits air to enter the tubular member through the compartment adjacent the inoculation end and reinserting an insertable member into the openings in the walls of any compartment that contain a medium which biochemically reacts under anaerobic conditions, such insertable member being so sized as to pass only through both walls defining any of such last-mentioned compartment.

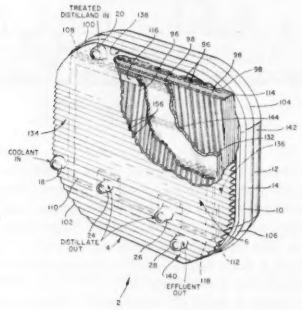
2. A method as in claim 1 which comprises coating any media which biochemically reacts under anaerobic conditions with a non-porous, pliable material which is solid below 50°C.

4. A method as in claim 1 wherein the innoculation member is provided with a scored portion and the innoculation member is broken at the scored portion after said innoculation member is withdrawn from the tubular member and utilizing one of said broken portions as the said insertable member.

B 317,624
MULTI-STAGE DISPOSABLE STILL
Franklin A. Rodgers, Brookline, Mass., assignor to Pactide Corporation, Dover, Del.
Filed Dec. 22, 1972, Ser. No. 317,624
Int. Cl. B01d *1/26, 3/00*
U.S. Cl. 202—174 **27 Claims**
Group Art Unit 175
References Cited

UNITED STATES PATENTS

2,288,061	6/1942	Arnold	165/166
3,111,982	11/1963	Ulbricht	165/166
3,129,145	4/1964	Hassler	159/DIG. 27
3,129,146	4/1964	Hassler	159/DIG. 27
3,183,963	5/1965	Mondt	165/166
3,244,224	4/1966	Hnilicka, Jr.	165/136
3,340,186	9/1967	Weyl	203/10
3,477,917	11/1969	Rodgers	203/10
3,497,423	2/1970	Rodgers	203/10
3,650,905	3/1972	Rodgers	203/10
3,661,721	5/1972	Rodgers	203/10



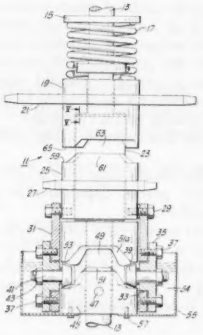
1. A disposable still structure, including:
an array of alternating vapor-impermeable and vapor-permeable stacked membranes in uniformly spaced layers means defining a plurality of open channels on at least one surface oa alternate ones of said impermeable membranes extending generally in a reference direction but canted in a first direction with respect to said reference direction;
means defining a plurality of open channels on at least one surface of each of said impermeable membranes intermediate said alternate impermeable membranes and extending generally in said reference direction but canted with respect to said reference direction in a second direction; means for sealing discrete portions of adjacent impermeable and permeable membranes to close both said pluralities of open channels to define at least a plurality of channels for receiving distilland on one side of said plurality of permeable membranes; and
means for maintaining a temperature differential across said permeable membranes whereby vapor from said distilland may pass through said permeable membranes and be condensed as distillate on the other side thereof.

18. A multi-stage distillation device of the type useful in distilling potable water from saline water by passing heated distilland over one surface of a microporous vapor-permeable, liquid-impermeable membrane and diffusing the vapor of said distilland through the pores of said membrane to the other side thereof where it may be cooled and condensed as potable water, including as elements in each of said multi-stages:
a first liquid and vapor-impermeable membrane having at least one corrugated surface;
a second liquid and vapor-impermeable membrane having a corrugated surface disposed facing a corrugated surface of said first impermeable membrane;
a vapor-permeable, liquid-impermeable membrane compressively sandwiched between said first and second impermeable membranes; and
means for preventing the facing corrugated surface of said impermeable membranes from nesting together, thereby preventing said vapor permeable membrane from being compressively urged into said corrugations;
wherein the corrugations in said first impermeable membrane are canted in one direction with respect to a reference and the corrugations in said second impermeable membrane are canted in a direction opposite said one direction.

B 394,300
REVERSING CLUTCH
Ward F. Gidick, Vernon Dr., R.D. 1, West Newton, Pa. 15089
Filed Sept. 4, 1973, Ser. No. 394,300
Int. Cl. C10b *21/10, 21/06*
U.S. Cl. 202—270 **10 Claims**
Group Art Unit 175
References Cited

UNITED STATES PATENTS

3,344,039	9/1967	Nestler	202/141
3,433,716	3/1969	Tucker	202/151
3,656,591	4/1972	Marland et al.	192/45



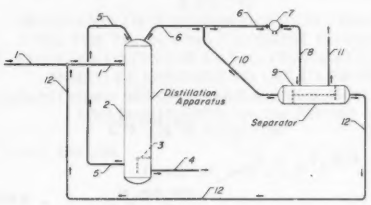
1. In a coke oven reversing mechanism including mechanical means operating both the fuel gas valves and the air and waste heat valves, a reversing clutch mechanism comprising:
a. a support shaft having fixed theron a cluch assembly with a cam profile on the surface therof;
b. a cam roller mounted to a sleeve surrounding said clutch assembly and engageable with said cam profile;
c. first sheave means secured to said first sleeve for turning said sleeve and urging said cam roller along the cam profile, said first sleeve moving axially of said shaft and engaging a second sheave engageable with said mechanical means; and
d. a second sleeve surrounding said shaft and supporting said second sheave.

6. In a coke oven reversing mechanism including mechanical means operating both the fuel gas valves and the air and waste heat valves, a reversing clutch mechanism comprising:
a. a support shaft having fixed theron a clutch assembly including peripheral surface groove having on one surface a cam profile;

b. a first slideable and rotatable sleeve surrounding said clutch assembly and carrying a cam roller that engages and coacts with said one surface;
c. means secured to said first sleeve for rotating said sleeve;
d. a second slideable and rotatable sleeve surrounding said shaft and spaced apart axially from said first sleeve;
e. rotatable means secured to said second sleeve;
f. resilient bias means urging said second sleeve toward said first sleeve; and
g. means that interconnects said first and second sleeves when said cam roller coacts with said cam profile and urges said first sleeve axially of said shaft, so constructed and arranged that, as said means for rotating said first sleeve turns, said rotatable means on said second sleeve rotates.

B 336,129
PREVENTION OF CORROSION
Rudolf H. Hausler, Algonquin & Mt. Prospect Rds., Des Plaines, Ill. 60016
Filed Feb. 26, 1973, Ser. No. 336,129
Int. Cl. B01d *3/34;* **C23f** *14/00*
U.S. Cl. 203—7 **7 Claims**
Group Art Unit 175
References Cited
UNITED STATES PATENTS

2,668,748	2/1954	Asbury	55/73
2,908,640	10/1959	Dougherty	208/47 X
3,189,537	6/1965	Carlton	208/47
3,394,055	7/1968	Ludwig	203/10
3,676,327	7/1972	Foroulis	203/7
3,689,238	9/1972	Stedman	203/7
3,754,376	8/1973	Kent	55/70
3,766,053	10/1973	Seffens	208/47



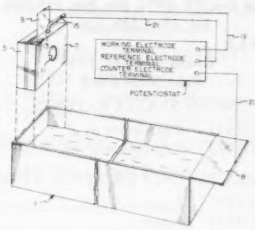
1. A method for the prevention of corrosion in a distillation apparatus provided with heat exchange and separation means used to strip gases from an aqueous medium consisting essentially of water containing entrained corrosion-producing gases which comprises the simultaneous circulation of two inhibitor-containing hydrocarbon streams, one of said streams entering the top portion of said apparatus, contacting the structural elements of said apparatus while in concurrent, downward flow with said aqueous medium, said aqueous medium being stripped of said entrained gases during said downward flow to produce a lean aqueous phase and an overhead vapor stream containing said gases and water, separating said hydrocarbon stream from said lean aqueous phase and recirculating said hydrocarbon stream to the top portion of said apparatus, contacting said overhead vapor stream with the other of said inhibitor-containing hydrocarbon streams, flowing said hydrocarbon stream concurrently with said vapor stream through heat exchange means to separation means, separating the gases from said hydrocarbon stream and water, and recirculating said hydrocarbon stream to contact said overhead vapor stream.

2. The method as set forth in claim **1** in which said hydrocarbon possesses a boiling point in excess of 250° C.

4. The method as set forth in claim **1** in which said inhibitor in said hydrocarbon comprises a salt of an acid and an amine.

B 275,426
METHOD OF MONITORING THE ACTIVE ROUGHENING AGENT IN A COPPER PLATING BATH
Louis P. Costas, Cheshire, Conn., assignor to Anaconda American Brass Company, Waterbury, Conn.
Filed July 26, 1972, Ser. No. 275,426
Int. Cl. G01n *27/46;* **C23b** *5/20*
U.S. Cl. 204—1 T **3 Claims**
Group Art Unit 114
References Cited
UNITED STATES PATENTS

3,479,256	11/1969	Smith et al.	204/1 T



1. A method of determining the amount of active roughening agent in a plating bath comprising
a. submerging a test cathode in a quantity of the bath to be tested;
b. shielding the test cathode from exposure to the bath except for a defined area;
c. placing a reference electrode adjacent to the cathode;
d. maintaining either the voltage difference between the cathode and reference electrode substantially constant or the current density in the defined area of the cathode substantially constant;
e. measuring said current density or said voltage difference whichever is not held constant;
f. thereafter repeating steps (d) and (e) with selected voltage differentials or selected current densities with baths having varying known active roughening agent content; and
g. finally determining the amount of such agent in an unknown bath by
i. controlling the voltage applied or controlling the current density;
ii. measuring the current density or voltage differential whichever is not controlled; and
iii. comparing the data with said prior measurements of (e) above.

B 445,740
ELECTROPLATING A GOLD-PLATINUM ALLOY AND ELECTROLYTE THEREFOR
Harold J. Wiesner, 883 Adams Ave., Livermore, Calif. 94550
Filed Feb. 25, 1974, Ser. No. 445,740
Int. Cl. C23b *5/32, 5/42*
U.S. Cl. 204—43 G **6 Claims**
Group Art Unit 114
References Cited
FOREIGN PATENTS OR APPLICATIONS

928,083	6/1963	Great Britain	204/43 G

OTHER PUBLICATIONS

A. K. Graham et al., Plating, Vol. 2, pp. 148–153, (1949).

1. An aqueous electrolyte solution for the electrodeposition of gold-platinum alloys comprising an alkali metal hexahy-

droxyplatinate and an alkali metal aurate and wherein the pH of the solution is above substantially 11.0.

B 435,844

METHOD AND COMPOSITION FOR PRODUCING BRIGHT PALLADIUM ELECTRODEPOSITIONS

Robert M. Skomoroski, 350 E. 25th St., Paterson, N.J., and Robert G. Zobbi, Linden Ln., Southbury, Conn.

Filed Jan. 23, 1974, Ser. No. 435,844
Int. Cl. C23b *5/32*
U.S. Cl. 204—43 N **15 Claims**
Group Art Unit 114

References Cited

UNITED STATES PATENTS

3,580,820	5/1971	Yamamura et al.	204/43 N
3,677,909	7/1972	Yamamura et al.	204/43 N

FOREIGN PATENTS OR APPLICATIONS

45-8769	3/1970	Japan	204/43 N
46-25604	7/1971	Japan	204/43 N
46-25605	7/1971	Japan	204/43 N
46-25606	7/1971	Japan	204/43 N
46-25607	7/1971	Japan	43 N
212,692	5/1968	U.S.S.R.	204/43 N
213,509	5/1968	U.S.S.R.	204/43 N

OTHER PUBLICATIONS

K.S. Indira et al., Metal Finishing, pp. 52–57, Vol. 6, (1973).

1. In an aqueous bath for the electroplating of palladium, the combination consisting essentially of:

A. 0.02–0.25 gram mole per liter of palladium ion;

B. 0.9–3.6 gram moles per liter of ammonium hydroxide;

C. 0.1–0.7 gram mole per liter of a soluble electrolyte selected from the group consisting of alkali metal and ammonium sulfates, sulfamates, phosphates, nitrates, nitrites and mixtures thereof;

D. a soluble metallic brightener selected from the group consisting of 0.002–0.04 gram mole per liter of cobalt ion, 0.004–0.02 gram mole per liter of nickel ion and mixtures thereof providing 0.003–0.068 gram mole per liter of metal ions; and

E. up to 6×10^{-4} gram mole per liter of cetyltrimethylammonium bromide;

said bath having a pH of 7.5–11.0.

8. In the method of electroplating palladium deposits upon a workpiece, the steps comprising:

A. immersing a workpiece having a conductive surface in an aqueous bath consisting essentially of:

1. 0.02–0.25 gram mole per liter of palladium ion;

2. 0.9–3.6 gram moles per liter of ammonium hydroxide;

3. 0.1–0.7 gram mole per liter of a soluble electrolyte selected from the group consisting of alkali metal ammonium sulfates, sulfamates, phosphates, nitrates, nitrites and mixtures thereof;

4. a soluble metallic brightener selected from the group consisting of 0.002–0.04 gram mole per liter of cobalt ion, 0.004–0.02 gram mole per liter of nickel ion and mixtures thereof providing 0.003–0.068 gram mole per liter of metal ions; and

5. up to 6×10^{-4} gram mole per liter of cetyltrimethylammonium bromide;

said bath having a pH of 7.5–11.0;

B. maintaining the temperature of said bath at 26°–60° Centigrade;

C. applying a potential across said workpiece and an anode inert to said bath, said potential providing a current density of 0.05–2.0 amperes per square decimeter and the anode to cathode surface ratio being 1.0–0:1.0; and

D. removing said workpiece from said bath

B 373,051

COMPOSITIONS AND PROCESS FOR THE ELECTRODEPOSITION OF METALS

Xavier Kowalski, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed June 25, 1973, Ser. No. 373,051
Int. Cl. C23b *5/30, 5/46*
U.S. Cl. 204—44 **10 Claims**
Group Art Unit 114

[56] **References Cited**

UNITED STATES PATENTS

2,673,214	3/1954	Bersworth et al.	260/502.5
2,961,311	11/1960	Bersworth et al.	260/502.5 X
3,293,176	12/1966	White	260/502.5 X
3,394,172	7/1968	Schiefer	260/502.5
3,475,293	10/1969	Haynes	204/48
3,617,343	11/1971	Kandler	117/47 R
3,706,635	12/1972	Kowalski	204/46

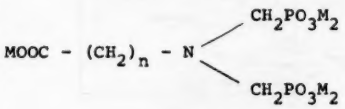
OTHER PUBLICATIONS

H. Koretzky, IBM Tech. Disclosure Bulletin, Vol. 9, No. 11, p. 1634, April 1967.

1. A process for the electrodeposition of divalent and polyvalent metal ions which comprises the steps of electrolyzing an aqueous solution comprising

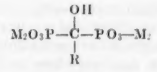
a. a divalent or polyvalent metal ion,

b. a carboxy amino phosphonic acid compound of the structure



, and

c. a 1-hydroxy alkylidene-1,1-diphosphonic acid compound of the structure



wherein M is hydrogen, alkali metal, ammonium, alkyl ammonium, or amine, n is an integer of from 3 to about 11 and R is a C_{1-11} alkyl radical; the concentration of (a) in said aqueous solution being from about 1 percent to 5 percent; the molar ratio of (a):(b) being from about 1:1 to 1:5; and the molar ratio (a):(c) being from about 2:1 to 1:5; the pH of said aqueous solution being from about 6.0 to 10.0, and the temperature of said aqueous solution being from about 30° to 90°C.

B 450,499
PROCESS FOR THE ELECTRODEPOSITION OF DUCTILE PALLADIUM AND ELECTROPLATING BATH USEFUL THEREFOR

Jerome J. Caricchio, Jr., Binghamton; George J. Saxenmeyer, Jr., Apalachin, and Edward R. York, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 12, 1974, Ser. No. 450,499
Int. Cl. C23b *5/24*
U.S. Cl. 204—47 **15 Claims**
Group Art Unit 114

References Cited

UNITED STATES PATENTS

1,921,941	8/1933	Powell et al.	204/47
1,981,715	11/1934	Atkinson	204/47 X
2,452,308	10/1948	Lambros	204/47
3,150,065	9/1964	Fatzer	204/47
3,458,409	7/1969	Hayashi et al.	204/43 N
3,544,435	12/1970	Angus et al.	204/47

FOREIGN PATENTS OR APPLICATIONS

224,243	11/1968	U.S.S.R.	204/47
280,153	2/1971	U.S.S.R.	204/47

OTHER PUBLICATIONS

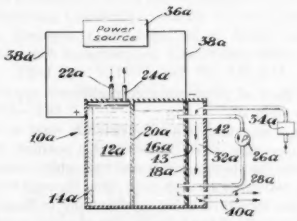
Chemical Abstracts, p. 1935, Apr. 20, 1943.
Chemical Abstracts, 9006e, pp. 476–477, Vol. 71, (1969).

1. An aqueous electrodeposition bath for electrodepositing nonporous, ductile palladium which comprises:
from about 16 to about 32 g/l $Pd(NH_3)_2Cl_2$;
from about 65 to about 250 g/l of NH_4Cl; and
aqueous ammonia to provide a pH of at least about 8.8.

B 361,743
OPERATION OF A DIAPHRAGM ELECTROLYTIC CELL FOR PRODUCING CHLORINE INCLUDING FEEDING AN OXIDIZING GAS HAVING A REGULATED MOISTURE CONTENT TO THE CATHODE

Gerhard Gritzner, 600 Gerald, Midland, Mich. 48640

Filed May 18, 1973, Ser. No. 361,743
Int. Cl. C01d *1/06*
U.S. Cl. 204—98 **9 Claims**
Group Art Unit 114



1. In a process to produce chlorine and an alkali metal hydroxide in an electrolytic diaphragm cell by feeding an alkali chloride brine to an anode compartment and passing alkali metal ions through the diaphragm into a cathode chamber, supplying sufficient electrical energy to an anode positioned in the anode compartment and a cathode positioned in the cathode compartment to release gaseous chlorine at the anode and form an alkali metal hydroxide in the cathode compartment and recovering the chlorine and alkali metal hydroxide, the improvement comprising substantially simultaneously contacting different surface portions of the cathode with the catholyte and with an oxidizing gas, controlling the moisture content of the oxidizing gas, and circulating the catholyte within the cathode compartment to thereby improve the electrical efficiency of the cell.

B 361,744
OPERATION OF A CATION EXCHANGE MEMBRANE ELECTROLYTIC CELL FOR PRODUCING CHLORINE INCLUDING FEEDING AN OXIDIZING GAS HAVING A REGULATED MOISTURE CONTENT TO THE CATHODE

Gerhard Gritzner, 600 Herald, Midland, Mich. 48640

Filed May 18, 1973, Ser. No. 361,744
Int. Cl. C01d *1/06*
U.S. Cl. 204—98 **7 Claims**
Group Art Unit 114

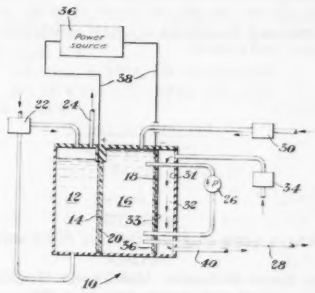
References Cited

UNITED STATES PATENTS

2,681,884	6/1954	Butler, Jr.	204/98
2,967,807	1/1961	Osborne et al.	204/98
3,262,868	7/1966	Juda	204/98

FOREIGN PATENTS OR APPLICATIONS

832,196	4/1960	Great Britain	204/98



1. In a process to produce chlorine and an alkali metal hydroxide in an electrolytic diaphragm cell by feeding an alkali chloride brine to an anode compartment and passing alkali metal ions through the diaphragm into a cathode chamber, supplying sufficient electrical energy to an anode positioned in the anode compartment and a cathode positioned in the cathode compartment to release gaseous chlorine at the anode and form an alkali metal hydroxide in the cathode compartment and recovering the chlorine and alkali metal hydroxide, the improvement in the cell with a cation exchange diaphragm comprising substantially simultaneously contacting different surface portions of the cathode with the catholyte and with an oxidizing gas, controlling the moisture content of the oxidizing gas, circulating the catholyte within the cathode compartment and controlling the catholyte head to maintain the catholyte upper surface level at a higher level than the anolyte upper surface level to thereby improve the electrical efficiency of the cell.

B 391,509
ELECTRODIALYSIS OF FIXER CONTAINING SOLUTIONS

Richard S. Fisch, and Norman Newman, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Aug. 24, 1973, Ser. No. 391,509
Int. Cl. C22d *1/12*
U.S. Cl. 204—109 **2 Claims**
Group Art Unit 114

References Cited

UNITED STATES PATENTS

3,634,088	1/1972	Cooley	96/60 BF
3,700,450	10/1972	Cooley	96/60 R

1. A process for the removal of silver and halide from a thiosulfate solution comprising thiosulfate, silver ions, and halide ions, said process comprising passing the thiosulfate containing solution through the cathode chamber of an electrodialysis cell which comprises:

1. an anode
2. a cathode
3. an anionic semipermeable membrane separating the anode and cathode and forming two chambers within the cell, and
4. a power source connected to the anode and cathode, passing an aqueous solution of an electrode active oxidizable species through the anode chamber, and with the power source applying a foltage differential across the anode and cathode.

B 346,350
UV AND LASER CURING OF THE POLYMERIZABLE BINDER

Vincent Daniel McGinniss, Middleburgh Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Filed Mar. 30, 1973, Ser. No. 346,350
Int. Cl. C08f *1/20, 1/56*
U.S. Cl. 204—159.23 **4 Claims**
Group Art Unit 142

References Cited

UNITED STATES PATENTS

3,326,710	6/1967	Brodie	204/159.23
3,661,588	5/1972	Chang	96/86 P
3,673,140	6/1972	Ackerman et al.	204/159.19

1. In a photopolymerization process for ultraviolet curing of an opacified film on a substrate, the film comprising a pigmented binder system of 1 weight part of an ethylenically unsaturated binder combined with about 0.05 to 2 weight parts of opacifying pigment, and exposing said film to an energy source containing UV energy having wavelengths between about 1,600 A and 4,000 A until said film is cured, the improvement which comprises:

providing a film of said pigmented binder system containing by weight about 0.5 to 3% of a halogenated derivative of naphthalene having at least one halogen attached to the alpha-atom attached to the naphthalene ring, 0.1 to 2% of an aromatic carbonyl compound comprising an aromatic amino ketone, and at least 0.5% aromatic photosensitizer selected from the group consisting of aromatic aldehydes and aromatic ketones different from said aromatic carbonyl compound.

B 411,145
ELECTROPHORESIS METHOD

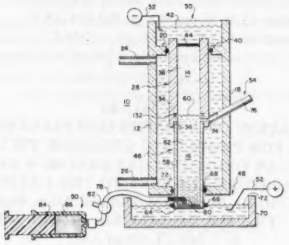
William B. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.

Division of Ser. No. 344,144, March 23, 1973, Pat. No. 3,795,600, which is a continuation-in-part of Ser. No. 226,016, Feb. 14, 1972,. This application Oct. 30, 1973, Ser. No. 411,145
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 G **21 Claims**
Group Art Unit 114

References Cited

UNITED STATES PATENTS

3,533,933	10/1970	Strauch	204/180 G
3,616,454	10/1971	Levy	204/299
3,630,882	12/1971	Dilworth	204/299
3,640,813	2/1972	Nerenberg	204/299
3,799,863	3/1974	Zeineh	204/299



1. A method of preparing electrophoresis apparatus comprising the steps of:

inserting a structure that is sufficiently rigid to be at least self supporting into a tube in such a position as to divide the tube into two portions and to enable communication of the two portions with each other through the structure with the structure being substantially orthogonal to the internal walls of the tube at least at some portions of the structure;

closing the tube at a first location;

inserting a first medium which is mobile from an end of the tube until it fills the area between the first location and a second location a short distance on the opposite side of the structure from the first location;

increasing the rigidity of the medium until it is sufficiently rigid to be supported by the structure, whereby said first medium serves as a first anticonvection medium; and

assembling said tube into an electrophoresis apparatus containing a second medium having better bulk flow characteristics than the first medium for series electrophoresis of a sample in the first and second medium.

B 336,345
METHOD OF ELECTRICALLY DEPOSITING GLASS PARTICLES ON OBJECTIVE BODY

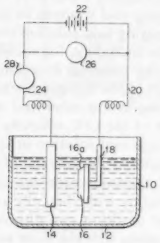
Takeshi Yamamoto, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1973, Ser. No. 336,345
Claims priority, application Japan, Mar. 2, 1972, 47-21734
Int. Cl. B01k *5/02*
U.S. Cl. 204—181 **6 Claims**
Group Art Unit 114

References Cited

UNITED STATES PATENTS

2,321,439	6/1943	Jerwey et al.	204/181
3,163,592	12/1964	Dolan et al.	204/181
3,379,625	4/1968	Csabi	204/181



1. A method of electrically depositing glass particles on a semiconductive body, comprising the steps of disposing the semiconductive body and an electrode in spaced relationship within a suspension having glass particles suspended in a non-ionized electrically conductive solvent consisting essentially of a first organic solvent to which the glass particles are lyophobic and a second organic solvent to which the glass particles are lyophilic, said suspended glass particles being negatively charged by said solvent, and applying a dc voltage across said semiconductive body and said electrode such that said semiconductive body has a positive polarity.

B 349,231
HYDROGEN SULFIDE SENSING CELL

John H. Riseman, Cambridge; Martin S. Frant, Newton, and John A. Krueger, Cambridge, all of Mass., assignors to Orion Research Incorporated, Cambridge, Mass.

Filed Apr. 9, 1973, Ser. No. 349,231
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 P **6 Claims**
Group Art Unit 114

References Cited

UNITED STATES PATENTS

2,864,747	12/1958	Roth	204/1 T
3,515,658	6/1970	Amdur	204/195 P
3,672,962	6/1972	Frant et al.	204/1 T

OTHER PUBLICATIONS

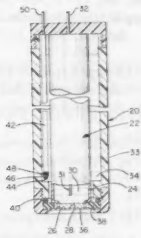
Stanley E. Manahan, Analytical Chem., Vol. 42, No.

1. An electrochemical cell for measuring the hydrogen sulfide content of a sample solution, said cell comprising in combination

a potentiometric sulfide ion-sensitive membrane electrode for providing an electrochemical potential responsively to the activity of sulfide ion in solution,

a body of electrolyte of fixed pH in the range between about pH 4 to pH 7 in contact with the ion-sensitive portion of said sulfide sensitive electrode and containing fluoride ions in a substantially fixed concentration,

a potentiometric fluoride ion-sensitive membrane electrode in contact with said electrolyte for providing a substantially fixed potential with respect to said electrolyte; and



a hydrogen sulfide permeable membrane arranged so as to separate the electrodes and electrolyte from said sample solution.

B 430,385
CEMENTED COLLECTOR BAR ASSEMBLIES FOR ALUMINUM CELL CARBON BOTTOM BLOCK

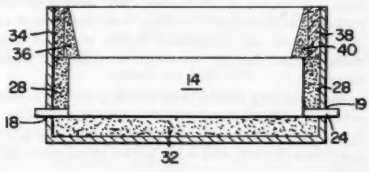
Jostein J. Vadla, Rocky River, and Robert G. Milner, Bay Village, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 3, 1974, Ser. No. 430,385
Int. Cl. C22d *3/02*; **B01k** *3/04*, *3/08*
U.S. Cl. 204—243 R **10 Claims**
Group Art Unit 114

References Cited

UNITED STATES PATENTS

2,728,109	12/1955	Bonnot	204/294 X
3,764,509	10/1973	Etzel et al.	204/294 X
3,787,311	1/1974	Wittner et al.	204/294



1. An improved method for constructing a conductive, metallic collector bar-carbonaceous block assembly in the cathode bottom of an aluminum reduction cell comprising the steps of:

a. positioning a metallic collector bar within a reduction cell upon the bottom surface thereof, the ends of said bar protruding a predetermined distance through openings in oppositely situated side walls of said cell, and

b. depositing a binder comprising a layer of an electrically conductive, carbonaceous and plastic cement onto the exposed surface of said bar, and

c. positioning a prebaked carbonaceous cathode block having a transverse slot along its length, in the bottom surface thereof, astride said bar to firmly embed such bar within said slot, said slot having a width exceeding the width of said bar and a depth shallower than the height of said bar, said binder securing said bar to said block.

B 318,640
ELECTROLYSIS CELL WITH VERTICAL BIPOLAR ELECTRODES

Umberto Giacopelli, Livorno, Italy, assignor to Solvay & Cie, Brussels, Belgium

Filed Dec. 26, 1972, Ser. No. 318,640
Claims priority, application Belgium, Dec. 23, 1971, 112096
Int. Cl. B01k *3/10*
U.S. Cl. 204—256 **3 Claims**
Group Art Unit 114

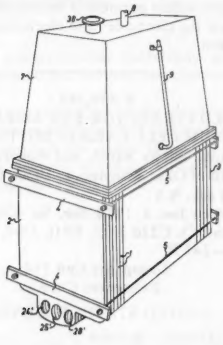
References Cited

UNITED STATES PATENTS

1,797,376	3/1931	Smith	204/258
1,855,732	4/1932	Smith	204/258
2,219,342	10/1940	Stewart	204/256
2,543,059	2/1951	Rawles	204/257
2,862,864	12/1958	Berghaus	204/256

FOREIGN PATENTS OR APPLICATIONS

864,097	4/1941	France	204/270



1. A bipolar filter press type diaphragm electrolyser for the production of chlorine, hydrogen and caustic alkali by the electrolysis of a solution of an alkali metal chloride, said electrolyser comprising:

a. a plurality of vertical elementary cells disposed face-to-face, connected in series and each having an anode, a cathode, a diaphragm between said anode and cathode and at least one peripheral frame made of insulating material and having openings through the upper part thereof;

b. means defining a tank above said cells for holding said solution comprising a partition tightly overlying all the frames and insulated from the latter and having holes and apertures therein, and a lid tightly fitted over said partition;

c. means for feeding said solution to said tank;

d. means for supplying said solution from said tank to said cells, said means including channels in said frames opening at one end inside said tank through said holes provided in the partition and opening at the other end in the respective cells through a bottom portion thereof, whereby the electric current by-passed through said solution in said tank is limited;

e. means for evacuating chlorine out of the cells, said means including said openings provided through the upper part of the frames, said apertures provided through the partition and registering with said openings and at least one duct attached to the partition and disposed about said apertures and extending upward from said partition and beneath the lid; and

f. means for evacuating hydrogen and caustic alkali out of the cells, each of said cells having at least one peripheral frame having an opening through a bottom portion thereof, and said means for evacuating caustic alkali out of the cells comprising, for each cell, a U-shaped tube of insulating material which extends upward into the cell, doubles back on itself and opens at one end in a bottom portion of the cell, and at the other end in said opening provided through the bottom of the peripheral frame of the cell, the openings of all the peripheral frames of the cells registering to form a duct for the caustic alkali.

2. A diaphragm electrolyser for the production of chlorine, hydrogen and caustic alkali by the electrolysis of a solution of an alkali metal, said electrolyser comprising:

a. a plurality of vertical elementary cells each having an anode, a cathode and a diaphragm between said anode and cathode, said cells being disposed face-to-face and being connected in series;

b. means defining a tank above said cells for holding said solution comprising a partition overlying said cells and electrically insulated from the latter and having apertures therein and a lid tightly fitted over said partition;

c. means for feeding said solution to said tank;

d. means for supplying said solution from said tank to said cells, said means including, for each cell, a separate feed duct of insulating material extending substantially over the whole height of the cell and opening at one end in the tank and opening at the other end in the cell through a bottom portion of the cell, whereby the electric current by-passed through said solution in said tank is limited;

e. means for evacuating chlorine out of the cells, said means including, said apertures provided through the partition and communicating with the cells and at least one duct attached to the partition and disposed about said apertures and extending upward from said partition and beneath the lid; and

f. means for evacuating hydrogen and caustic alkali out of the cells, each of said cells having at least one peripheral frame each having an opening through a bottom portion thereof, and said means for evacuating hydrogen out of the cells comprising, for each cell, a tube extending upward into the cell and opening, at one end, in the upper part of the cell and, at the other end, in said opening provided through the bottom of the peripheral frame of the cell, the openings of all the peripheral frames of the cells registering to form a duct for the hydrogen.

B 388,701
DIAPHRAGM CELL HAVING A TUBE BUNDLE CATHODE

Harlan B. Johnson, Rittman, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 15, 1973, Ser. No. 388,701
Int. Cl. B01k *3/10*
U.S. Cl. 204—258 **10 Claims**
Group Art Unit 114

References Cited

UNITED STATES PATENTS

3,385,779	5/1968	Nishiba et al.	204/272
3,479,274	11/1969	Bott	204/260
3,647,672	3/1972	Mechandjiev	204/278 X
3,692,660	9/1972	MacMullin et al.	204/272 X

FOREIGN PATENTS OR APPLICATIONS

1,541,575	10/1967	France	204/260

1. A chlorine diaphragm cell comprising:

A. a cathode bundle having:

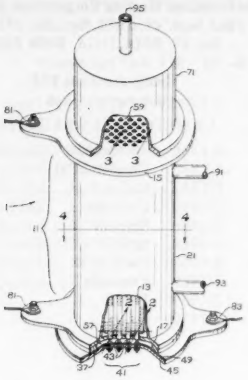
a first cathode head and a second cathode head;

a plurality of individual, hollow, electrolyte permeable parallel cathode tubes mounted in and extending from said first cathode head to and mounted in said second cathode head; and

an electrolyte permeable diaphragm on the interior sur-

face of each of the hollow cathode tubes; and

B. an anode bundle having individual metal anodes, each of



said anodes corresponding to one of said hollow cathodes and arrayed concentrically therein.

B 236,609

APPARATUS FOR THE FORMATION OF COATINGS ON A SUBSTRATUM

Jacques Leon Bernard, Toulouse, France, assignor to Centre National D'Etudes Spatiales, Paris, France

Filed Mar. 21, 1972, Ser. No. 236,609

Claims priority, application France, Mar. 25, 1971, 71.10598

Int. Cl. C23c *15/00*

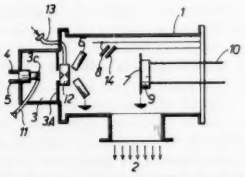
U.S. Cl. 204—298 **5 Claims**

Group Art Unit 114

References Cited

UNITED STATES PATENTS

3,408,283	10/1968	Chopra et al.	204/298
3,409,529	11/1968	Chopra et al.	204/298
3,472,751	8/1969	King	204/298
3,484,358	12/1969	Androshuk et al.	204/298
3,576,729	4/1971	Sigournay et al.	204/192



1. Apparatus for forming a thin coating of material on a substratum, including an enclosure which will withstand a high vacuum, said enclosure being partitioned into a first chamber containing a duoplasmatron, an intermediate chamber and a third chamber, said duoplasmatron including activation means for delivery of ions and inlet means for feeding said duoplasmatron with gas, the intermediate chamber being positioned so as to allow the transit therethrough of ions from said duoplasmatron into said third chamber, said third chamber containing a target device, a substratum device, and a set of ion focusing electrodes for directing the ions entering said third chamber to said target whose ejected particles are deposited onto said substratum, and means for supplying a gas capable of reacting with the material of said target and a small passage connecting said gas source with said intermediate chamber so as to introduce a small amount of reacting gas into said intermediate chamber.

B 323,568

COAL DISSOLVING PROCESS

Walter H. Seitzer, West Chester, and Robert W. Shinn, Aston, both of Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

Continuation-in-part of Ser. No. 250,999, May 8, 1972, abandoned. This application Jan. 15, 1973, Ser. No. 323,568

Int. Cl. C10g *1/06*

U.S. Cl. 208—10 **6 Claims**

Group Art Unit 116

References Cited

UNITED STATES PATENTS

1,919,108	7/1933	Harrison et al.	208/10
3,687,838	8/1972	Seitzer	208/10

FOREIGN PATENTS OR APPLICATIONS

102,303	10/1937	Australia	208/10
406,986	2/1934	Great Britain	208/10
407,227	3/1934	Great Britain	208/10

1. The process for dissolving sub-bituminous coal which comprises heating at about 400°C. to about 425°C. under a total pressure of from about 2000 to about 5000 psig, a mixture of said finely divided coal, a hydrogen donor oil in a weight ratio to said coal of from about 1:1 to 5:1, carbon monoxide, hydrogen in an amount such that its partial pressure is about the same as that of said carbon monoxide, water in an amount such that the molar ratio of water to carbon monoxide is from about 2:1 to 1:2, and as a promoter, an alkali metal or ammonium molybdate in an amount of from about 0.5 to about 10% by weight of said coal.

B 389,070

HYDROCARBON REFORMING PROCESS WITH HEATED AROMATIC RECYCLE

Hans-Juergen Schoennagel, Trenton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 16, 1973, Ser. No. 389,070

Int. Cl. C10g *35/06*

U.S. Cl. 208—135 **8 Claims**

Group Art Unit 116

References Cited

UNITED STATES PATENTS

2,349,045	5/1944	Laying et al.	260/673.5
2,955,080	10/1960	Carter	208/141
2,985,581	5/1961	Alliston et al.	208/65
3,250,816	5/1966	Waldby	208/138
3,501,542	3/1970	Carr et al.	260/673.5
3,729,409	4/1973	Chen	208/135
3,756,942	9/1973	Cattanach	208/141

1. In the process of endothermically converting fresh feed comprising aliphatic hydrocarbons to a product consisting essentially of gas and a substantially aromatic liquid by contacting such with a ZSM-5 type of crystalline alumino silicate zeolite in the absence of added hydrogen at at a conversion temperature of 650° to 1500°F at an equivalent space velocity of up to about 15 WHSV; The improvement which comprises separating said gas and said aromatic liquid product; separating from said liquid product a substantially aromatic recycle stream; heating said separated recycle stream to a temperature which is insufficiently high to substantially degrade said aromatics but which is sufficiently high so that upon mixing said heated recycle stream with said fresh feed, the temperature of said admixture is a conversion temperature as afore-

said; mixing said heated portion and said fresh feed; and contacting said admixture with said zeolite.

TDN
JAM
RC

B 411,483
REFORMING PROCESS

John H. Sinfelt, 296 Chancer Dr., Berkeley Heights, N.J. 07922, and James L. Carter, 798 River Rd., Chatham, N.J. 07928

Continuation-in-part of Ser. No. 111,695, Feb. 1, 1971, Pat. No. 3,789,020. This application Oct. 31, 1973, Ser. No. 411,483
Int. Cl. C10g *35/08*
U.S. Cl. 208—139 **15 Claims**
Group Art Unit 116

References Cited

UNITED STATES PATENTS

2,384,501	9/1945	Streicher	252/477 Q
2,423,835	7/1947	Houdry	260/680 R
2,802,794	8/1957	Sprauer	252/466 PT
2,854,404	9/1958	Prater et al.	208/139
2,890,178	6/1959	Thorn et al.	252/466 PT
2,897,137	7/1959	Schwarzenbek	252/466 PT
3,415,737	12/1968	Kluksdahl	208/138

1. A process for the reforming of naphtha feed stocks which comprises contacting a naphtha feed stock and hydrogen at reforming conditions with a catalyst composition comprising a physical mixture of a metal component supported on a nonmetallic refractory material and additional nonmetallic refractory material, said supported metal component comprising a combination of Group VIII metals or a combination including at least one Group VIII metal and at least one metal selected from Group IB or VIIB metals contained on a nonmetallic refractory material, the nonmetallic refractory material of said supported component comprising less than about one-fourth of the total nonmetallic refractory material of said catalyst, said catalyst additionally containing a halogen constituent.

B 367,739
DETOXIFICATION OF ALDEHYDES AND KETONES

Everett R. Lashley, Jr., South Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Filed June 7, 1973, Ser. No. 367,739
Int. Cl. C02c *1/02, 5/02*
U.S. Cl. 210—12 **11 Claims**
Group Art Unit 176

References Cited

UNITED STATES PATENTS

3,676,334	7/1972	Zuckerman et al.	210/18

OTHER PUBLICATIONS

Chem. Abstr., 133842e, Vol. 73, 1970.

1. A method of disposal of wastewaters containing α,β-ethylenically unsaturated aldehydes selected from the class consisting of acrolein, methacrylaldehyde, crotonaldehyde, 2,4-hexadienal, and 2-ethylcrotonaldehyde or methyl vinyl ketone comprising contacting said wastewaters with sufficient base to render the pH of the wastewaters alkaline, maintaining the alkaline wastewaters at a pH of at least 8 at a temperature of about 25° to 100° C. for at least 15 minutes whereby the α,β-ethylenically unsaturated aldehydes or methyl vinyl ketone are condensed to higher molecular weight products, and then biologically degrading the waste water in a biological system containing active biomass.

B 292,563
METHOD FOR CLEANING METALLIC FILTERS OF PLASTIC WASTE

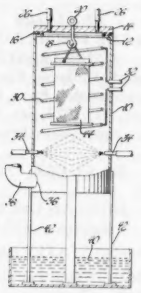
Paul N. Lavins, Jr., Grosse Pointe Farms, Mich., assignor to American Induction Heating Corporation, Detroit, Mich.

Filed Sept. 27, 1972, Ser. No. 292,563
Int. Cl. B01d *35/18;* **B08b** *7/00*
U.S. Cl. 210—71 **5 Claims**
Group Art Unit 173

References Cited

UNITED STATES PATENTS

81,164	8/1868	Sturdevant	134/5
2,280,064	4/1942	Dennen et al.	219/10.57
2,291,862	8/1942	Bailey	156/344 X
2,917,418	12/1959	Cathcart	134/5
3,250,643	5/1966	Sergent	134/5
3,374,117	3/1968	Savage	134/19
3,398,252	8/1968	Bock et al.	219/10.77
3,435,172	3/1969	Emerson	219/10.77
3,485,670	12/1969	Fisher	134/5
3,494,794	2/1970	Hittel	134/19



3. The method of removing plastic waste from a metallic element comprising: suspending the element in an elevated position and heating the element in an atmosphere purged of oxygen, by inductive heating, until the element reaches a temperature below the auto-ignition point but above the melting point of the plastic and until gravity pulls all of the plastic with the exception of a thin layer away from the element, wherein melting of the plastic will occur only at its interface with the element, and then heating the element at a temperature above the auto-ignition point of the plastic for a sufficient period of time to cause decomposition of the thin layer of plastic so that no plastic residues remain on the metallic element.

B 340,833

AEROBIC SEWAGE TREATMENT SYSTEM

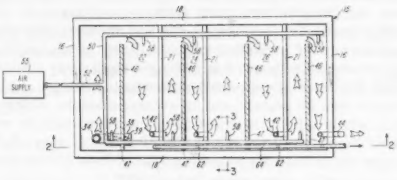
Kenneth J. Yost, Eaton, Ohio, assignor to Coate Burial Vault, Inc., West Milton, Ohio

Filed Mar. 13, 1973, Ser. No. 340,833
Int. Cl. C02c 5/04
U.S. Cl. 210—199 4 Claims
Group Art Unit 176

References Cited

UNITED STATES PATENTS

1,734,011	10/1929	Harrison	210/15 X
3,054,602	9/1962	Proudman	210/15 X
3,116,912	1/1964	Finsberg	210/195 X
3,133,878	5/1964	Kober	210/220
3,148,948	9/1964	Lutz	261/119 R
3,462,360	8/1969	McKinney	210/195 X
3,547,812	12/1970	McWhirter	210/15 X
3,547,813	12/1970	Robinson et al.	210/15 X
3,624,696	11/1971	Cohen et al.	261/119 R



1. In apparatus for treating a liquid containing organic solid material, comprising a tank having side and bottom walls defining a treating chamber, a removable cover member mounted on said tank for enclosing said chamber, inlet means for directing the liquid into said chamber, and outlet means for limiting the liquid within said chamber at a level below said cover member to define an air space within said chamber between said cover member and the surface of the liquid, the improvement comprising a plurality of air nozzles supported by said cover member and positioned above the surface of the liquid, means for supplying air to said nozzles for producing corresponding streams of air from said nozzles against the surface of the liquid to cause surface diffusion of the air into the liquid and aerobic digestion of the organic solid material within the liquid, each of said nozzles being positioned on an incline relative to said cover member and the surface of the liquid, means for producing slow and continuous horizontal circulation of the liquid within said chamber in a generally circular path and including an arrangement of said nozzles spaced along said path and inclined in the same direction relative to the circulation of the liquid along said path to effect said circulation in response to the air streams contacting the surface of the liquid, and means defining a passage for exhausting the air from said chamber.

B 329,476

DEMULSIFIED EXTENDED LIFE FUNCTIONAL FLUID

Edward G. Foehr, San Rafael, Calif., assignor to Chevron Research, San Francisco, Calif.

Filed Feb. 5, 1973, Ser. No. 329,476
Int. Cl. C10m 1/48
U.S. Cl. 252—32.7 E 7 Claims
Group Art Unit 117

References Cited

UNITED STATES PATENTS

2,824,836	2/1958	Smith et al.	252/32.7 E
2,964,473	12/1960	Hughes et al.	252/33.4 X
3,219,666	11/1965	Norman et al.	252/51.5 A X
3,368,972	2/1968	Otto	252/47.5
3,377,281	4/1968	Gower	252/32.7 E
3,591,497	7/1971	Walker	252/75 X
3,796,662	3/1974	Lyle et al.	252/51.5 A X
3,850,455	9/1958	Kern et al.	252/33.4 X

1. A lubricating oil composition which comprises:

A. a major amount of an oil of lubricating viscosity,

B. a dispersant amount of an alkenyl succinimide of a polyalkylene polyamine,

C. an antioxidant amount of a Group II metal salt of a dihydrocarbyl dithiophosphoric acid,

D. a friction modifying amount of a hydroxy fatty acid ester of a dihydric or polyhydric alcohol or an oil-soluble oxalkylated hydroxy fatty acid ester of a dihydric or polyhydric alcohol, and

E. a detergent amount of a Group II metal salt of a hydrocarbylsulfonic acid.

B 357,402

GLASS CUTTING FLUID

Thomas E. Boller, Southfield, and Salvatore Guerra, Melvindale, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 4, 1973, Ser. No. 357,402
Int. Cl. C10m 1/30
U.S. Cl. 252—58 2 Claims
Group Art Unit 117

References Cited

UNITED STATES PATENTS

1,857,235	5/1932	Burton	252/11
2,449,114	9/1948	Gebauer	252/15
3,037,932	6/1962	Barker	252/15 X
3,129,182	4/1964	McLean	252/58 X
3,169,928	2/1965	Herold	252/68
3,461,755	8/1969	Gerew et al.	83/169
3,664,956	5/1972	Messina et al.	252/58

1. A fluid for use in a glass cutting operation wherein the fluid acts to lubricate the glass cutting tool and to reduce spalling of the glass at the score therealong, which fluid comprises: 70 to 97 percent by volume of methyl chloroform which acts as a cutting tool lubricant, and 30 to 3 percent by volume of a hydrocarbon oil of lubricating viscosity in said methyl chloroform.

B 292,054
ANTIBACTERIAL LAUNDRY OIL AND DUST CONTROL COMPOSITION

Richard E. Ware, c/o Sun Oil Company, P.O. Box 426, Trainer, Pa. 19061

Continuation-in-part of Ser. No. 174,236, Aug. 23, 1971, abandoned. This application Sept. 25, 1972, Ser. No. 292,054

Int. Cl. C09k *3/22*

U.S. Cl. 252—88 **4 Claims**

Group Art Unit 165

References Cited

UNITED STATES PATENTS

2,372,588	3/1945	Larsen et al.	424/258 X
2,770,626	11/1952	Nicholson et al.	424/258 X
2,876,141	3/1959	Matthews	117/139.5 F
3,085,984	4/1963	Degener	424/258
3,379,565	4/1968	Witcher, Jr.	117/139.5 E

1. A dust control fabric impregnated with a mineral oil containing from about 0.02 to about 2.0 percent by weight of 8-hydroxyquinoline.

B 305,417
SOAP COMPOSITIONS

Joseph Peter Nirschl, and Robert Andrew Gloss, both of Cincinnati, Ohio, assignors to The Procter and Gamble Company, Cincinnati, Ohio

Filed Nov. 10, 1972, Ser. No. 305,417

Int. Cl. C11d *9/20*

U.S. Cl. 252—131 **10 Claims**

Group Art Unit 223

References Cited

UNITED STATES PATENTS

3,716,488	2/1973	Kolsky et al.	252/120 X
3,765,911	10/1973	Knowles et al.	252/131 X

1. A fabric laundering composition, comprising:

A. from about 75% to about 96% by weight of granular particles which comprise

i. from about 30% to about 80% by weight of said granular particles of a soap compound, and

ii. from about 1% to about 30% by weight of said granular particles of a curd-dispersing agent;

B. from about 4% to about 25% by weight of an impalpable smectite-type clay having an ion exchange capacity of at least about 50 meq/100 grams, attached to the surface of said granular particles, said composition having a weight ratio of granular particles to impalpable smectite-type clay of from about 20:1 to 3:1; and

C. from about 0.5% to about 15% by weight of a substantially water-insoluble quaternary ammonium anti-static agent of the formula

$$[R_2NR_2']_nX^{n-}$$

wherein each R is a hydrocarbyl group containing from about 10 to about 22 carbon atoms and each R′ is a hydrocarbyl group containing from about 1 to about 4 carbon atoms, X is an anion and *n* is an integer from 1 to 3, the weight ratio of smectite-type clay to quaternary ammonium compound being in the range of from about 40:1 to about 1:1, said quaternary ammonium compound being in releasable combination in said composition.

B 285,200
AGGLOMERATED RUBBER CHEMICALS

Henning Roeder; Gunther P. Langner, both of Leichlingen; Bernd Scherhag, Leverkusen; Hans-Lothar Nickenig, Leverkusen-Steinbuechel, all of Germany, and Rene Loix, Leuven-Heverlee, Belgium, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 31, 1972, Ser. No. 285,200

Claims priority, application Germany, Sept. 4, 1971, 2144378

Int. Cl. E09k *3/00*

U.S. Cl. 252—182 **1 Claim**

Group Art Unit 164

References Cited

UNITED STATES PATENTS

3,042,526	7/1962	Spiess et al.	426/285
3,387,923	6/1968	Shen	23/313 X
3,447,962	6/1969	Megowan	23/313 X
3,516,902	6/1970	Bonneau	161/168
3,645,765	2/1972	Frazier et al.	264/117 X
3,647,704	3/1972	Schrantz	252/182
3,705,019	12/1972	Mesiah et al.	264/117 X

1. A free-flowing, binder-free solid rubber chemical in the form of a smooth surfaced spherical agglomerate of individual particles, said rubber chemical being at least one member selected from the group consisting of vulcanization accelerators, vulcanization retarders, antiagers, antiozonants, masticating agents, regenerating agents and mixtures thereof, said agglomerate of individual particles being produced by the agglomeration process of atomizing a binder-free suspension of at least one of said rubber chemicals having a purity of greater than 95 percent and an average diameter of less than 60 μ with a solids content of from 5 to 60 percent by weight and a viscosity of from 0.5 to 100 cP at 20° C. into a hot gas stream which has an inlet temperature of from 150° to 350° C. and an outlet temperature below 120° C., recovering and returning particles with an average diameter of less than about 60 μ to the agglomeration process and recovering resulting agglomerated particles with a moisture content of less than 1 percent by weight and an average diameter from about 60 μ to 500 μ.

B 311,977
FORMALDEHYDE-HEXAMETHYLENE TETRAMINE COMPOSITIONS

Benjamin T. Woodruff, 1643 Woodvale Rd., Charleston, W. Va. 25314

Filed Dec. 4, 1972, Ser. No. 311,977

Int. Cl. C09k *3/00*

U.S. Cl. 252—182 **6 Claims**

Group Art Unit 223

References Cited

UNITED STATES PATENTS

2,496,595	2/1950	Moyer et al.	252/8.55 E

1. A stable aqueous solution of up to 80% by weight of hexamethylene tetramine and formaldehyde containing an acidic material selected from mineral acids, organic acids or an acid reacting salt, in which solution the mole ratio of formaldehyde to hexamethylene tetramine is from 3.3:1 to 2:1, the mole ratio of acidic material to hexamethylene tetramine is at least 1:2, the pH of the solution is from 7.4 to 8.4, the density of the solution is about 1.15 to 1.35 grams per ml. and the viscosity is from 20 to 55 cp at 25°C.

2. A method for making a stable aqueous solution of up to about 80% by weight of hexamethylene tetramine and formaldehyde by making a slurry of hexamethylene tetramine in an aqueous solution of up to 60% by weight formaldehyde, the

amount of formaldehyde to hexamethylene tetramine varying from 3.3:1 to 2:1, adding to said slurry an acidic material selected from mineral acids, organic acids or an acid reacting salt, the acidic material being added in the amount of one mole of acid to two moles of hexamethylene tetramine, and heating the mixture at a temperature between 60° and 90°C. until it becomes clear.

B 288,018

METHOD OF MANUFACTURING A LUMINESCENT ALKALINE EARTH HALOPHOSPHATE

Willem Lambertus Wanmaker, and Dragutin Radielovic, both of Emmasingel, Eindhoven, Netherlands

Filed Sept. 11, 1972, Ser. No. 288,018

Claims priority, application Netherlands, Sept. 11, 1971, 7112525

Int. Cl. C09k *1/36*

U.S. Cl. 252—301.4 P **5 Claims**

Group Art Unit 113

References Cited

UNITED STATES PATENTS

3,157,603	11/1964	Mooney et al.	252/301.4 P X
3,378,499	4/1968	Hickok	252/301.4 P
3,468,812	9/1969	Wanmaker et al.	252/301.4 P
3,575,876	4/1971	Piper	252/301.4 P
3,637,519	1/1972	Piper	252/301.4 P

OTHER PUBLICATIONS

Hoekstra "Philips Research Reports," Suppl. No. 2, 1968.

1. In a method of preparing a trivalent antimony activated luminescent alkaline earth halophosphate having the apatite structure by contacting gaseous antimony trioxide in an inert atmosphere with a base material at a temperature of between 900° and 1,250°C, said base material comprising at least one substance selected from the group consisting of mixtures of reactants capable of producing alkaline earth halophosphate having the apatite structure, non-activated alkaline earth halophosphate having the apatite structure and manganese activated alkaline earth halophosphate having the apatite structure, the improvement which comprises forming the gaseous antimony trioxide in at least one vessel separated from the base material by heating for at least 0.25 hour at a temperature between 900° and 1,250°C at least one substance selected from the group consisting of the alkaline earth antimonites, cadmium antimonite, manganese antimonite, mixtures of at least one of said antimonites with at least one of calcium and strontium pyrophosphate, mixtures of at least one alkaline earth antimonate with at least one alkaline earth pyrophosphate, mixtures of cadmium antimonate with at least one alkaline earth pyrophosphate and mixtures of manganese antimonate with at least one alkaline earth pyrophosphate, in a molar ratio of antimonate to pyrophosphate of between 4 and 0.5, and contacting the gaseous antimony trioxide obtained with the base material by means of an inert gas stream.

B 345,390

METHOD OF PREPARING HALOPHOSPHATE PHOSPHOR OF CONTROLLED PARTICLE SIZE

Donald J. Demarest, Butler, and Herman R. Heytmeijer, Whippany, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 27, 1973, Ser. No. 345,390

Int. Cl. C09k *1/36*

U.S. Cl. 252—301.4 P **3 Claims**

Group Art Unit 113

References Cited

UNITED STATES PATENTS

3,099,627	7/1963	Mooney et al.	252/301.4 P
3,242,369	3/1966	King et al.	252/301.4 P X
3,395,979	8/1968	Schafer	423/308
3,635,660	1/1972	Bruce et al.	252/301.4 P X

1. An improved method of preparing halophosphate phosphor of controlled particle size by controlling the preparation of calcium hydrogen orthophosphate raw mix ingredient, said method comprising:

a. precipitating calcium hydrogen orthophosphate dihydrate crystals from a fluid formed by mixing a calcium chloride solution with a diammonium phosphate solution;
b. separating said precipitated di-hydrate crystals from the remainder of said fluid;
c. compacting said di-hydrate crystals by centrifuging, wherein said centrifuging subjects said crystals to a force of about 120–800 times the force of gravity for 5–200 seconds, said separating and compacting occurring concurrently;
d. deagglomerating said compacted crystals, wherein said deagglomeration is performed by high shear mechanical stirring of a slurry comprising said di-hydrate crystals and water, and the weight ratio of di-hydrate crystals to water is about 0.6–1.5, and said mechanical agitation is performed for a sufficient time to provide a distinct lessening of viscosity during said agitation;
e. converting said di-hydrate crystals into anhydrous calcium hydrogen orthophosphate crystals;
f. preparing a raw mix comprising said anhydrous calcium hydrogen orthophosphate crystals; and
g. firing said raw mix to form said halophosphate phosphor.

B 407,728

HALOGEN CONTAINING LEAD ACTIVATED CALCIUM SULFIDE LUMINESCENT COMPOSITION

Willi Lehmann, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 876,766, Nov. 14, 1969, abandoned. This application Oct. 18, 1973, Ser. No. 407,728

Int. Cl. C09k *1/12*

U.S. Cl. 252—301.4 S **4 Claims**

Group Art Unit 113

References Cited

UNITED STATES PATENTS

3,673,102	6/1972	Lehmann et al.	252/301.4 S

FOREIGN PATENTS OR APPLICATIONS

650,458	2/1951	Great Britain	252/301.4 S

OTHER PUBLICATIONS

Lenard et al., "Handbuch Der Experimental Physik,"

1. A luminescent composition which has an emission substantially confined to the ultraviolet range of 300–400 NM which composition is substantially free from alkali metal, said composition consisting essentially of CaS:Pb, X, wherein Pb is present in an activating proportion of from about 10^{-5} to 10^{-3} gram-atom per mol of sulfide, and X is at least one of the halogens, chlorine, bromine or iodine in a gram-atom amount which is at least equal to and up to about ten times greater than the Pb gram-atom content.

B 370,706
PROCESS FOR REDUCING FOAMING OF LIQUIDS SUSCEPTIBLE TO FOAMING

Ferenc Sagi, Bron, and Michel Roussos, Lyon, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 153,829, June 16, 1971, abandoned. This application June 18, 1973, Ser. No. 370,706

Claims priority, application France, June 17, 1970, 70.22284

Int. Cl. B01d *19/04*

U.S. Cl. 252—321 **3 Claims**

Group Art Unit 223

References Cited

UNITED STATES PATENTS

2,114,490	4/1938	Harris	252/311 X
2,829,112	4/1958	Solomon	252/358
3,054,789	9/1962	D'Amato	260/234 R
3,076,768	2/1963	Boylan	252/321 X

1. A process for reducing the foaming of a liquid susceptible to foaming which comprises incorporating in the liquid, as an anti-foaming agent, an emulsion consisting essentially of water and a silicone phase and 2 to 50 parts by weight sucroglyceride per 100 parts by weight silicone.

B 265,369
CORROSION INHIBITING COMPOSITION CONTAINING AN AMINOALKYL PHOSPHONIC ACID AND AN INORGANIC NITRITE

Arthur Harris, 50 Tulworth Rd., Poynton; John Burrows, 12 Harvey Rd., Congleton, and James Roger Hargreaves, 12 Vale Ave., Sale, all of England

Filed June 22, 1972, Ser. No. 265,369

Claims priority, application Great Britain, June 26, 1971, 30064/71

Int. Cl. C23f *11/10, 11/16*

U.S. Cl. 252—389 A **22 Claims**

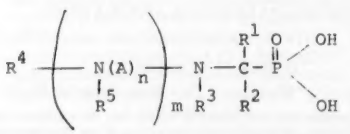
Group Art Unit 223

References Cited

UNITED STATES PATENTS

2,351,465	6/1944	Wachter	252/387
3,425,954	2/1969	Ruzevick et al.	252/389 R
3,433,577	3/1969	Shick	252/387
3,483,133	12/1969	Hatch et al.	252/389 A
3,532,639	10/1970	Hatch	252/389 A
3,668,138	6/1972	Hoover et al.	252/387
3,720,498	3/1973	Redmore	252/389 A
3,723,347	3/1973	Mitchell	242/389 A

1. A synergistic combination consisting essentially of a combination of from 10% to 99% by weight of an alkali metal nitrite and from 90% to 1% by weight of a compound having the formula



I

wherein

R^1 and R^2 may be the same or different and each represents hydrogen or a hyrocarbyl or hydroxy-substituted hydrocarbyl radical containing up to 8 carbon atoms,

R^3 and R^4 may be the same or different and each represents hydrogen or a hydrocarbyl or hydroxy-substituted hydrocarbyl radical containing up to 3 carbon atoms, a carboxy-alkyl or alkoxy radical containing up to 3 carbon atoms, a phosphonic acid, an alkylene phosphonic acid grouping containing up to 4 carbon atoms or an aralkylene phosphonic acid such that not more than two phosphonic acid groupings separated by less than two carbon atoms may be attached to any nitrogen atoms,

R^5 is hydrogen or an alkylene phosphonic acid containing up to 4 carbon atoms,

A is a saturated divalent hydrocarbyl radical containing up to 6 carbon atoms,

m is 0 or an integer from 1 to 60,

n is 0 or 1; when *m* is 0, R^4 may be a hydroxy grouping or R^3 and R^4 together with the nitrogen atom may form a six membered ring; when *m* is 1, the grouping $R^3N—A—NR^5$ may form a heterocyclic ring, and when m is greater than 1, the constituent R^5 groupings may be the same or different; and the water-soluble salts thereof.

B 260,945
PROCESS FOR PREPARING AN IRON CONTAINING CATALYST

Arnold Hausweiller, Zons; Nikolaus Paris, and Karl-Heinz Ennenbach, both of Dormagen, all of Germany, assignors to Erdolchemie Gesellschaft mit beschrankter Haftung, Cologne Germany

Filed June 8, 1972, Ser. No. 260,945

Claims priority, application Germany, June 11, 1971, 2128903

Int. Cl. B01j *11/82*

U.S. Cl. 252—437 **9 Claims**

Group Art Unit 117

References Cited

UNITED STATES PATENTS

3,171,859	3/1965	Sennewald et al.	252/437 X
3,226,422	12/1965	Sennewald et al.	252/437 X
3,264,347	8/1966	Sennewald et al.	252/437 X
3,497,461	2/1970	McClellan et al.	252/437
3,516,789	6/1970	Sennewald et al.	252/437 X

1. Process for preparing an iron-containing catalyst for the synthesis of acrylonitrile by the reaction of propylene with ammonia and molecular oxygen or air on a supported catalyst containing bismuth, molybdenum, iron and phosphorus, which consists essentially of

a. impregnating a bismuth/phosphorus molybdate catalyst on silica gel with an aqueous solution of an iron salt;

b. drying and calcining the impregnated catalyst for 0.3 to 7 hours at 500°C. to 750°C.;

c. the catalysts thus produced consisting essentially of catalytically active metal contents as follows:

6. to 26% by weight bismuth;

2 to 20% by weight molybdenum

0.5 to 10% by weight iron and

0.1 to 1% by weight phosphorus;

and having a specific surface of from 4 to 50 m^2/g.

B 330,354
OXIDATION CATALYST

Ramon A. Mount, and Harold Raffelson, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 7, 1973, Ser. No. 330,354
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 **8 Claims**
Group Art Unit 117

References Cited

UNITED STATES PATENTS

3,031,508	4/1962	Etherington et al.	252/437 X
3,293,268	12/1966	Bergman et al.	252/437 X

1. A catalyst which consists essentially of phosphorus, vanadium and oxygen, the phosphorus to vanadium atom ratio being in the range of about 1:2 to about 2:1, the catalyst having a porosity of at least about 35 percent and being prepared by the process which comprises

a. contacting vanadium compounds and phosphorus compounds under conditions which will provide at least 50 atom percent of the vanadium in the tetravalent state to form a catalyst precursor,
b. recovering the catalyst precursor,
c. forming the catalyst precursor into structures, and
d. calcining the catalyst precursor at temperatures of about 350° to about 600°C.

DAM

B 418,153
ANTIMONY PENTAFLUORIDE HYDROCARBON CONVERSION CATALYST

Paul G. Rodewald, Rocky Hill, and Darrell D. Whitehurst, Titusville, both of N.J., assignors to Mobil Oil

Filed Nov. 21, 1973, Ser. No. 418,153
Int. Cl. B01j *11/78*
U.S. Cl. 252—441 **3 Claims**
Group Art Unit 117

References Cited

UNITED STATES PATENTS

3,394,202	7/1968	Oelderik	252/441 X
3,607,044	9/1971	List et al.	252/449 X

1. A hydrocarbon conversion catalyst consisting essentially of antimony pentafluoride deposited on silica resulting from pyrolysis of methylated silica.

B 310,271
REMOVAL OF IRON CONTAMINANTS FROM POROUS MATERIALS

Clifton William Broughton, Hallsville, Tex., and Joseph Tucker Truemper, Wilmington, Del., assignors to ICI America Inc., Wilmington, Del.

Filed Nov. 29, 1972, Ser. No. 310,271
Int. Cl. C01b *31/08*
U.S. Cl. 252—444 **7 Claims**
Group Art Unit 117

References Cited

UNITED STATES PATENTS

2,912,470	11/1959	Kircher et al.	252/444
3,018,288	1/1962	Tokime et al.	252/444
3,168,485	2/1965	Khobloch et al.	252/413
3,312,697	4/1967	Riethmann et al.	252/445
3,576,767	4/1971	Summers	252/444

FOREIGN PATENTS OR APPLICATIONS

1,147,925	5/1963	Germany	252/444

1. In a method for removing iron from a porous carbonaceous material wherein the porous carbonaceous material is treated with an acidic solution, the improvement comprising including in said solution a reducing agent selected from the group consisting of hydrazine, thiosulfates, sulfites, nitrites, and hydroxyl amine, provided that the amounts of acid and reducing agent in said solution are sufficient to solubilize the iron.

RJB

B 302,998
HYDROGENATIVE CONVERSION CATALYSTS

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 281,116, Aug. 16, 1972, , which is a division of Ser. No. 869,389, Oct. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 669,288, Sept. 20, 1967, abandoned. This application Nov. 2, 1972, Ser. No. 302,998
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z **5 Claims**
Group Art Unit 117

References Cited

UNITED STATES PATENTS

3,210,265	10/1965	Garwood	252/455 Z
3,367,885	2/1968	Rabo et al.	252/455 Z
3,471,410	10/1969	Oleck et al.	252/455 Z
3,592,760	7/1971	Young	252/455 Z

1. The catalytic composition containing a crystalline aluminosilicate zeolite, a Group VI metal component selected from the group consisting of tungsten and molybdenum metals, oxides and sulfides, and a stabilizing amount of a stabilizing component comprising a Group IV metal selected from the group consisting of titanium and zirconium.

B 337,409
METHOD FOR ACTIVATING A CATALYST

Ralph Cox, Pasadena, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 2, 1973, Ser. No. 337,409
Int. Cl. B01j *11/06*
U.S. Cl. 252—467 **11 Claims**
Group Art Unit 117

References Cited

UNITED STATES PATENTS

2,825,721	3/1958	Hogan et al.	260/683.15 R
2,985,597	5/1961	Dye et al.	252/467
2,987,487	6/1961	Stevens et al.	252/467
3,526,601	9/1970	Fotis et al.	252/467 X

1. In a method for activating a catalyst comprising controllably passing a heated fluid stream at a preselected rate through a catalyst positioned in a heating zone, discharging the fluid stream from the heating zone and passing said fluid stream to a first location,

the improvement consisting of

a. measuring the pressure of the heated fluid at the heating zone or downstream thereof, and
b. passing at least a portion of said heated fluid discharging from said heating zone to a second location when said measured pressure has reached a first preselected value.

B 388,298

DETERGENT COMPOSITION

Charles Rowland Gauterin, Farndon; John Pedlow Parke, and Christopher Charles Storer, both of Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 188,505, Oct. 12, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 388,298

Claims priority, application Great Britain, Oct. 14, 1970, 48859/70

Int. Cl. C11d *3/066*

U.S. Cl. 252—527 **3 Claims**

Group Art Unit 223

References Cited

UNITED STATES PATENTS

3,318,817	5/1967	Smith	252/137
3,422,020	1/1969	Schmadel et al.	252/99
3,562,166	2/1971	Nicholson et al.	252/527 X

1. A fabric-washing detergent composition consisting essentially of, by weight:

a. from about 5 to about 50% of a detergent-active compound selected from the group consisting of anionic, nonionic, amphoteric and zwitterionic detergent-active compounds;

b. from about 5 to about 45% of the trisodium salt of nitrilotriacetic acid; and

c. from about 5 to about 30% of the trisodium salt of orthophosphoric acid,

said salts comprising together from about 10 to about 50% by weight of said detergent composition.

B 310,740

DETERGENT COMPOSITIONS CONTAINING ENZYMES

Christian Barrat, Brussels, Belgium, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Nov. 30, 1972, Ser. No. 310,740

Int. Cl. C11d *3/26, 1/38*

U.S. Cl. 252—547 **4 Claims**

Group Art Unit 165

References Cited

UNITED STATES PATENTS

3,345,300	10/1967	Speel	252/547
3,689,424	9/1972	Berg et al.	252/110
3,704,228	11/1972	Eckert et al.	252/DIG. 12

FOREIGN PATENTS OR APPLICATIONS

7,209,755	1/1973	Netherlands

1. A detergent composition consisting essentially of:

a. from 0.001% to about 5% by weight of a proteolytic enzyme having an iso-electric point greater than 9.5 selected from the group consisting of the enzymes produced by bacillus alcalophilus NCIB8772 and bacterium strain NCIB 10147;

b. from about 20% to about 80% by weight of a cationic surfactant; and

c. from about 80% to about 20% by weight of an anionic surfactant;

wherein said surfactants (b) and (c) are expressed by reference to the sum of both.

B 314,049

MICROPOROUS SHEET STRUCTURES

Harro Traubel, and Klaus Konig, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 161,321, July 9, 1971, abandoned. This application Dec. 11, 1972, Ser. No. 314,049

Claims priority, application Germany, July 11, 1970, 2034538

Int. Cl. C08g *22/00, 22/36, 22/44*

U.S. Cl. 260—2.5 AY **2 Claims**

Group Art Unit 141

References Cited

UNITED STATES PATENTS

3,536,639	10/1970	Schachowskoy	260/2.5
3,582,396	6/1971	Konig et al.	260/2.5
3,622,526	11/1971	Zorn et al.	260/2.5
3,625,871	12/1971	Traubel et al.	260/2.5
3,692,570	9/1972	Traubel et al.	260/2.5

1. In a process for the production of microporous sheet structures by a process which comprises reacting an organic polyisocyanate with at least one organic compound containing at least two hydroxyl or amino hydrogen atoms reactive with NCO groups as starting materials to produce a polyaddition product which in the homogeneous state exhibits a shore A hardness greater than 40 and a softening range above about 100° C., said reaction being effected in an organic liquid which boils below 250° C., dissolves the starting materials but is a nonsolvent for the polyaddition product to be formed and has no significant swelling effect upon the polyaddition product, by applying the solution to a substrate and removing the organic liquid, the improvement which comprises, effecting said reaction in a mixture of said organic liquid and 1 to 300 percent by weight based on the weight of said polyaddition product to be formed of a solvent selected from the group consisting of N,N-dimethylformamide, N,N-diethyl formamide, N,N-dimethyl-acetamide, N-methylmorpholine, formyl morpholine, N-acetyl morpholine, N-acetyl pyrrolidine, butyrolactone, N,N′-diacetyl piperazine diethyl sulphone, N,N′-diformyl piperazine, dimethylnitroamine (N,N) dimethyl sulphone, dipropyl sulphone, ethylene carbonate, methyl benzoate, proprolactone, N-methyl pyrrolidone, hexamethylphosphoramide, tetramethyl urea, dimethyl sulphoxide, dimethyl cyanamide and camphor, said solvent having an evaporation number at least 1.5 times that of the aforesaid organic nonsolvent.

B 213,211

PHOTO-DEGRADING RESINOUS COMPOSITION

Hiroshi Miyoshi, Takatsuki; Hirohumi Mori, and Yoriko Tanoue, both of Suita, all of Japan, assignors to Sekisu Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 28, 1971, Ser. No. 213,211

Int. Cl. C08f *3/40*

U.S. Cl. 260—2.5 B **10 Claims**

Group Art Unit 141

References Cited

UNITED STATES PATENTS

2,374,589	4/1945	Dreisbach	260/63
2,500,082	3/1950	Lieber et al.	260/63
2,897,167	7/1959	Dreisbach et al.	260/63
3,052,651	9/1962	Sterling	260/63
3,753,952	8/1973	Guillet	260/63

FOREIGN PATENTS OR APPLICATIONS

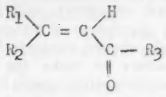
988,290	4/1965	Great Britain

OTHER PUBLICATIONS

Industrial and Engineering Chemistry – Vol. 45, No. 7, 1953, pp. 1532 to 1538.

1. A photo-degrading resinous composition which consists essentially of from 50 to 100% by weight of a copolymer

composed of (i) 95.0–99.9% by weight of a monomer selected from the group consisting of styrene and methyl methacrylate, (ii) 5.0–0.1% by weight of a diene monomer and (iii) 0.5 to 4.9% by weight of an unsaturated ketone having the formula



wherein R_1, R_2 and R_3, which may be the same or different, represent a hydrogen atom or a methyl or phenyl group.

B 351,218

SPONGE RUBBER RUG UNDERLAY HAVING IMPROVED HEAT AGE RESISTANCE

Richard E. Benton, Alliance, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Apr. 16, 1973, Ser. No. 351,218
Int. Cl. C08c *17/10;* **C08d** *13/10*
U.S. Cl. 260—2.5 HB **3 Claims**
Group Art Unit 142

References Cited

UNITED STATES PATENTS

3,095,398	6/1963	Howland et al.	260/2.5 L
3,264,232	8/1966	Lucke	260/2.5 L
3,542,700	11/1970	Hilditch et al.	260/2.5 L
3,645,926	2/1972	Dunlop	260/2.5 L
3,719,614	3/1973	Wright	260/2.5 L
3,737,488	6/1973	Porter et al.	260/2.5 L
3,741,845	6/1973	De Goria	260/2.5 L

1. A cured flexible sponge rubber rug underlay composition, which is capable of withstanding a temperature of about 275°F. for at least about 24 hours without appreciable degradation or loss of resiliency, comprising:

a. about 100 parts by weight of a rubber which may be subject to oxidative degradation and which is selected from the group consisting of natural rubber and a rubbery copolymer consisting of butadiene and styrene;
b. from about 150 and to 300 parts by weight of calcium carbonate;
c. from about 0.5 to 3.0 parts by weight of an antioxidant comprising a low temperature reaction product of diphenyl amine and acetone; and
d. from about 1.0 to 3.0 parts by weight of trisodium phosphate.

B 276,993

METHOD OF MAKING PERMSELECTIVE INTERPOLYMER MEMBRANES

Lester T. C. Lee, Parsippany, and Kang-Jen Liu, Somerville, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

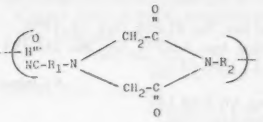
Filed Aug. 1, 1972, Ser. No. 276,993
Int. Cl. C08f *47/08;* **C08g** *53/08;* **C08j** *1/14*
U.S. Cl. 260—2.5 M **9 Claims**
Group Art Unit 142

References Cited

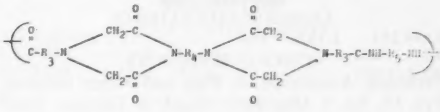
UNITED STATES PATENTS

3,719,640	3/1973	Lee et al.	260/78 TF
3,728,348	4/1973	Lee et al.	260/78 TF

1. A process for the manufacture of a substantially macroscopically homogeneous membrane comprising forming a common solution of (a) from about 5 to about 80 percent of a matrix polymer; (b) from about 5 to about 95 percent of poly[1,ω-alkylene (2,6-diketopiperazine)1,4-dicarboxamide] selected from the group consisting of those having the formulae:



and



wherein R_1 and R_3 are substituents selected from the group consisting of phenylene radicals and alkylene radicals having 1 to 12 carbon atoms and R_2,R_4 and R_5 are substituents selected from the group consisting of aliphatic and aromatic diradicals having 1 to 12 carbon atoms and may include oxygen, sulfur, and nitrogen atoms, wherein said matrix polymer (a) is compatible with the polymer (b), and wherein the ratio of (a) to (b) produces a membrane with a water content of from about 15 percent to about 75 percent, forming a membrane of a desired thickness, and crosslinking the membrane to convert it into an insoluble membrane of predetermined porosity.

B 351,590

COATING COMPOSITIONS CONTAINING A POLYBUTADIENE AND A DRYING OIL

Lili W. Altschuler, Wynnewood, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 16, 1973, Ser. No. 351,590
Int. Cl. C08c *11/72;* **C08d** *09/14*
U.S. Cl. 260—23.7 R **3 Claims**
Group Art Unit 141

References Cited

UNITED STATES PATENTS

2,581,413	1/1952	Hillyer	260/23.7 R
3,499,857	3/1970	Searight	260/23.7 R

FOREIGN PATENTS OR APPLICATIONS

1,046,392	10/1966	Great Britain	260/23.7 R
322,114	1/1929	Great Britain	260/23.7 R

1. A composition, having a Brookfield Viscosity, at room temperature, of 100–500 centipoises, consisting essentially of

A. 30–90 percent, by weight of solids, of a polybutadiene having a weight average molecular weight of 3,000–500,000;

B. 10–70 percent, by weight of solids, of a drying oil having a combined linoleic acid and linolenic acid content of 40 percent or more, and having a Brookfield Viscosity less than that of the polybutadiene;

and

C. an organic liquid carrier.

B 241,433
WAX COATING COMPOSITIONS

Edward A. Pullen, 139 Miromonti Drive, Fullerton, Calif. 92632

Continuation-in-part of Ser. No. 82,088, Oct. 19, 1970, abandoned. This application Apr. 5, 1972, Ser. No. 241,433
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 AV **8 Claims**
Group Art Unit 145

References Cited

UNITED STATES PATENTS

3,644,254 2/1972 Dew ..... 260/28.5 AV

OTHER PUBLICATIONS

Technical Association of Pulp and Paper Industry, Vol. 45, No. 5, May 1962, Blends of Ethylene Vinyl Acetate Copolymers and Wax as Flexible Paper Coatings, Lamar et al.

1. A method for preparing a wax coating blend having reduced moisture vapor permeability which comprises: dissolving and blending an ethylene-vinyl acetate copolymer and about 0–200 ppm of an antioxidant in molten petroleum wax, and agitating and mixing the molten wax-polymer blend with an oxygen-containing gas for a time insufficient to significantly degrade said wax but sufficient to partially oxidize said polymer, whereby the moisture vapor permeability of the blend is substantially reduced and thereafter adding to the oxidized blend an increment of anti-oxidant.

B 388,580
METAL OXIDE PASTE DISPERSIONS AND USE AS CURING AGENTS

Glenn C. Vickery, Barberton, Ohio, assignor to Basic Incorporated, Cleveland, Ohio

Division of Ser. No. 354,339, April 25, 1973,. This application Aug. 15, 1973, Ser. No. 388,580
Int. Cl. C08f *45/52, 45/28*
U.S. Cl. 260—28.5 B **21 Claims**
Group Art Unit 145

References Cited

UNITED STATES PATENTS

3,717,600 2/1973 Dalhuisen et al. ..... 260/28.5 B

OTHER PUBLICATIONS

Vulcanization of Elastomers, Alliger et al., 1964,

1. The process for curing haloprene polymers which comprises incorporating into the polymer stock up to about 12 parts by weight based on 100 parts by weight of polymer, of a paste co-dispersion consisting essentially of from about 50% to about 80% by weight of a mixture of from about 30 to about 80 parts by weight of magnesium oxide and from about 10 to about 60 parts by weight of zinc oxide, the oxides having an average particle size of up to about 10 microns, a non-aqueous liquid vehicle and an oil-soluble or oil-dispersible surface active agent, and heating the mixture to effect curing of the polymer.

B 412,619
POLYTETRAFLUOROETHYLENE AQUEOUS DISPERSIONS WHICH PROVIDE COATINGS OF IMPROVED GLOSS

David Alan Holmes, Vienna, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 72,555, Sept. 15, 1970, abandoned. This application Nov. 5, 1973, Ser. No. 412,619
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 F **9 Claims**
Group Art Unit 143

References Cited

UNITED STATES PATENTS

2,686,767 8/1954 Green ..... 260/29.6 F
3,019,206 1/1962 Robb ..... 260/29.6 F

1. The composition consisting essentially of an aqueous dispersion of (a) a non-melt-fabricable polytetrafluoroethylene, (b) a nonelastomeric, melt-fabricable tetrafluoroethylene copolymer and (c) a nonionic surfactant for said polytetrafluoroethylene and said copolymer, said tetrafluoroethylene copolymer being a copolymer of tetrafluoroethylene with sufficient other perfluorinated ethylenically unsaturated copolymerizable monomer to make the copolymer melt-fabricable said copolymer being present in the amount from 1 to 6 percent based on the weight of said polytetrafluoroethylene, said nonionic surfactant being present in the amount from 3 to 15 percent based on the weight of said polytetrafluoroethylene plus said copolymer, said polytetrafluoroethylene and said copolymer being in the form of particles dispersed in the water of said dispersion.

B 265,862
FLAME PROOFING TEXTILE TREADING COMPOSITION OF TRIS(HYDROXYMETHYL) PHOSPHINE-UREA ADDUCT AND POLYVINYLBROMIDE

Darrell J. Donaldson; George L. Drake, Jr., both of Metairie; John V. Beninate, Gretna; Wilson A. Reeves, Metairie, and Donald J. Daigle, New Orleans, all of La., assignors to The United States of America as represented by the Secretary of Agriculture

Continuation of Ser. No. 141,357, May 7, 1971, abandoned. This application June 23, 1972, Ser. No. 265,862
Int. Cl. C08f *45/24;* **C08g** *51/24*
U.S. Cl. 260—29.6 MN **3 Claims**
Group Art Unit 143

References Cited

UNITED STATES PATENTS

2,519,348 8/1950 Burnell et al. ..... 260/29.6 MP
2,846,413 8/1958 Reeves et al. ..... 260/29.6 MP X
3,054,698 9/1962 Wagner ..... 260/29.6 MP X
3,243,391 3/1966 Wagner ..... 260/29.6 MP X
3,732,342 5/1973 Gibbons et al. ..... 260/29.6 MP X

1. A process for preparing a flame retardant chemical formulation comprising mixing, at room temperature in an aqueous ethanol solvent, a quantity of tris(hydroxymethyl)phosphine-urea 2:1 adduct with sufficient quantity of polyvinylbromide to yield a solution containing an adduct to polyvinylbromide ratio of about 1 part by weight to 2 parts by weight.

B 312,477
GRAFT COPOLYMERS OF POLY (N-VINYL LACTAM) HAVING DIACETONE ACRYLAMIDE AND ACRYLIC ACID ESTERS GRAFTED THEREON

Eugene S. Barabas, Watchung, and Marvin M. Fein, Westfield, both of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 6, 1972, Ser. No. 312,477
Int. Cl. C08f *5/02, 33/04;* **C08g** *30/14*
U.S. Cl. 260—29.6 WB **11 Claims**
Group Art Unit 142

References Cited

UNITED STATES PATENTS

3,097,185 7/1963 Armen et al. ..... 260/876 R
3,277,056 10/1966 Coleman 260/63
3,536,650 10/1970 Jasinski et al. 260/885
3,558,742 1/1971 Schmid et al. ..... 260/836 R

1. A graft copolymer of a monomer mixture comprising approximately by weight 5 to 90 percent diacetoneacrylamide and 0 to 85 percent of an ester of acrylic or methacrylic acid graft polymerized on 10 to 95 percent of polymeric N-vinyl lactam as substrate.

B 324,505
CONTROLLING VISCOSITY OF CHLOROPRENE-SULFUR COPOLYMERS

Alfred Michael Doyle, Londonderry, Ireland, and William Shear, Louisville, Ky., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 17, 1973, Ser. No. 324,505
Int. Cl. C08d *3/14*, *7/10*; C08k *1/40*
U.S. Cl. 260—29.7 SQ 8 Claims
Group Art Unit 145

References Cited

UNITED STATES PATENTS

2,234,215	3/1941	Youker	260/30.2
3,105,055	9/1963	Aho	260/30.8
3,308,085	3/1967	Sparks et al.	260/29.7
3,318,832	5/1967	Sparks et al.	260/29.7
3,320,201	5/1967	Sparks et al.	260/29.7
3,325,527	6/1967	Hardy et al.	260/30.8
3,362,925	1/1968	Jenkins et al.	260/29.7
3,378,538	4/1968	Sparks et al.	260/92.3
3,488,313	1/1970	Sparks et al.	260/29.7

1. In a process for polymerizing chloroprene, containing up to 50% by weight of an ethylenically-unsaturated monomer copolymerizable therewith, in an aqueous emulsion containing a small amount of dissolved sulfur to give a latex of rubbery polymer in which the polymer is plasticized by the addition of a tetraalkyl thiuram disulfide and a sodium alkyl dithiocarbamate and isolating the polymer in a multiplicity of viscosity grades, the improvement which comprises maintaining the mole ratio of said dithiocarbamate to said thiuram disulfide substantially constant and varying the total amount of dithiocarbamate plus thiuram disulfide present to give isolated polymers of each desired viscosity.

B 400,293
RUBBER FORMULATIONS

Marion Gattuso, Ten Upo Plaza, Algonquin and Mt. Prospect Rds., Des Plaines, Ill.

Continuation-in-part of Ser. No. 197,938, Nov. 11, 1971, abandoned. This application Sept. 24, 1973, Ser. No. 400,293
Int. Cl. C08c *11/54*
U.S. Cl. 260—30.8 R 6 Claims
Group Art Unit 145

References Cited

UNITED STATES PATENTS

2,989,513	6/1961	Hendry et al.	260/33.6 A S
3,223,691	12/1965	Greenberg et al.	260/33.6 A X
3,709,958	1/1973	Burleigh	260/759

OTHER PUBLICATIONS

Piccolastic; 1963; pages 6, 13, 18;

Morton; Introduction to Rubber Technology; 1959; Reinhold Pub. Co.; pages 166–167;

1. A rubber formulation containing, as an oil extender therein, a styrene distillation column bottoms product obtained by distillation of styrene in the presence of a sulfur polymerization inhibitor, said bottoms product containing as a major portion thereof an organo-sulfur compound.

B 406,065
ACETOXYSILICON ADHESION PROMOTER AND PRIMER COMPOSITION

Chi-Long Lee, Midland, and Jay R. Schulz, Bangor Twp., Bay County, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Oct. 12, 1973, Ser. No. 406,065
Int. Cl. C08g *51/34*
U.S. Cl. 260—32.8 SB 19 Claims
Group Art Unit 145

References Cited

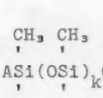
UNITED STATES PATENTS

3,377,309	4/1968	Harper	260/32.8 SB
3,677,998	7/1972	Young	260/33.6 SB

1. A composition under anhydrous conditions consisting essentially of an organic solvent solution of

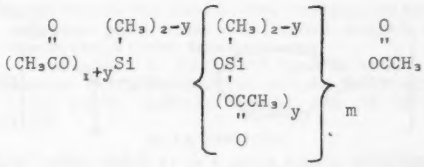
a. a reaction product obtained by mixing under essentially anhydrous conditions

1. an organosiloxane of the formula



in which A is a monovalent radical selected from the group consisting of vinyl and methyl radicals and k has an average value of from 0 to 20 inclusive where the organosiloxane species having values of k above 20, is present, are in no more than minor amounts and

2. an acetoxysilicon compound of the formula



in which m has an average value of from 0 to 5 inclusive and y is 1 or 2,

(1) and (2) being mixed in proportions to provide a ratio of hydroxyl in (1) to acetoxy in (2) of from 1/14 to ⅔,

b. an alkyl silicate selected from the group consisting of ethylorthosilicate, propylorthosilicate, ethylpolysilicate and propylpolysilicate, and

c. an organotitanate of the formula

$$Ti(OR)_4$$

wherein each —OR is a monovalent radical selected from the group consisting of alkoxy radicals having from 1 to 5 carbon atoms and acetylacetonoxy,

(a) provides 5 to 100 weight percent, (b) provides 0 to 50 weight percent and (c) provides 0 to 50 weight percent, where (a), (b) and (c) equals 100 weight percent, said organic solvent solution being from 50 to 99.9 weight percent of an organic solvent selected from the group consisting of ketones, halogenated hydrocarbons and hydrocarbons all having boiling points no greater than 150°C.

B 293,378

METHOD FOR FORMING EPOXY RESIN PRODUCTS

Kenzo Kadotani; Tatuo Honda, and Tokio Isogai, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 29, 1972, Ser. No. 293,378
Int. Cl. C08g *51/04*; **C08k** *1/40*
U.S. Cl. 260—37 EP **19 Claims**
Group Art Unit 145

References Cited

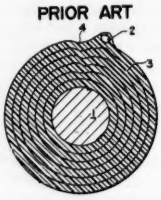
UNITED STATES PATENTS

2,928,809	3/1960	Hicks	260/47
3,288,747	11/1966	Sussman	260/37 EP
3,471,435	10/1969	Miller	260/37 EP
3,726,841	4/1973	Mirolli	260/37 EP

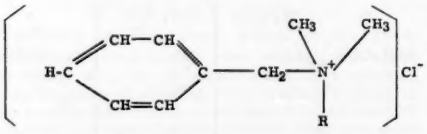
OTHER PUBLICATIONS

Handbook of Epoxy Resins, Lee & Neville, McGraw-Hill Book Co., 1967, page 9-8, relied upon.
Handbook of Epoxy Resins, Lee & Neville, pp. 9-14, relied upon.

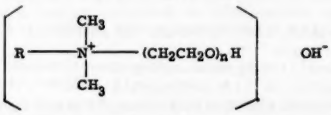
PRIOR ART



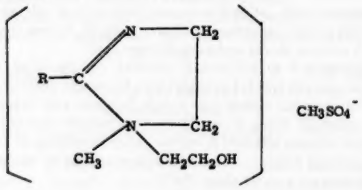
1. A method for manufacturing a formed epoxy resin article comprising inorganic or organic filler materials or structural elements by using an acid anhydride as a hardener which comprises arranging said filler materials or structural elements in a desired configuration treating said filler materials or structural elements so arranged with a quaternary ammonium salt selected from the group consisting of an alkyldimethylbenzyl ammonium chloride represented by the formula:



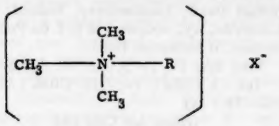
wherein R is alkyl having 8 to 18 carbon atoms, an alkylaminoethanol represented by the formula:



wherein R is alkyl having 9 to 18 carbon atoms and *n* is an integer of from 1 to 3, an alkylaminosulfonate represented by the formula:



wherein R is alkyl having 2 to 11 carbon atoms, and an alkyltrimethyl ammonium salt represented by the formula:



wherein R is alkyl having 8 to 18 carbon atoms and X is chloine or bromine, impregnating the treated filler materials or structural elements with a liquid epoxy resin containing two or more epoxy groups in each molecule said liquid epoxy resin including said acid anhydride, and curing said epoxy resin by heating.

B 363,674

EPOXY RESIN COMPOSITIONS

Hiroshi Komoto, Tsurugashima, and Kaoru Ohmura, Asaka, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed May 24, 1973, Ser. No. 363,674
Claims priority, application Japan, June 5, 1972, 47-55141
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 EP **15 Claims**
Group Art Unit 145

References Cited

UNITED STATES PATENTS

3,297,608	1/1967	Noshay et al.	260/47 EN X
3,464,854	9/1969	Bolger	260/37 EP X

1. An epoxy resin composition comprising:

I. 100 parts by weight of an epoxy resin having at least two epoxy groups in the molecule; and

II. 1–200 parts by weight of 1,3,6-triaminomethyl hexane or the reaction product thereof with an adduct forming compound selected from the group consisting of

a. a diepoxide or a glycidyl epoxy resin in up to about 0.5 times the molar amount of the triaminomethyl hexane, and

b. a monoepoxide or a vinyl compound in about 1 to 4 times the molar amount of the triaminomethyl hexane.

B 313,900

FLAME-RETARDANT COMPOSITION

Lionel T. Wolford, Freehold, and Francis T. Wadsworth, Trenton, both of N.J., assignors to Cities Service Company, New York, N.Y.

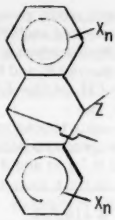
Filed Dec. 11, 1972, Ser. No. 313,900
Int. Cl. C09k *3/28*
U.S. Cl. 260—45.75 B **6 Claims**
Group Art Unit 141

References Cited

UNITED STATES PATENTS

2,028,715	1/1936	Hanson	252/8.1
2,406,645	8/1946	Thomas	260/671
2,955,141	10/1960	Schmerling	260/648
2,967,842	1/1961	Roberts	260/33.8
3,361,687	1/1968	Stahnecker	260/2.5
3,403,036	9/1968	Hindersinn et al.	260/45.75

1. A composition comprising (A) a normally flammable organic polymer selected from the group consisting of polypropylene, polyethylene, polystyrene, rubber-modified polystyrene, and acrylonitrile-butadiene-styrene terpolymer and (B) a flame retardant corresponding to the formula:



wherein X is chloro or bromo, *n* is an integer of 0–4, and Z is a divalent saturated polybromoalkylene or polybromocycloalkylene group containing 4–20 carbon atoms and 2–8 bromine atoms; said valencs being on adjacent carbon atoms.

B 386,592

THERMALLY-STABLE HIGH NITRILE RESINS AND METHOD FOR PRODUCING THE SAME

Eddie Wardlow, Jr., Cleveland, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed Aug. 8, 1973, Ser. No. 386,592

Int. Cl. C08f *45/60*

U.S. Cl. 260—45.9 NC **11 Claims**

Group Art Unit 144

References Cited

UNITED STATES PATENTS

3,313,867	4/1967	Blackburn et al.	260/45.9 NC
3,314,914	4/1967	Suling et al.	260/45.9 NC
3,399,161	8/1968	Ichikawa et al.	260/45.9 NC

1. A polymer composition stable toward thermal discoloration containing from about 0.1 to 1.5 parts by weight of acrylamide per hundred parts of resin, wherein the polymer is composed of 100 parts by weight of:

A. at least 50% by weight of at least one nitrile having the structure

$$CH_2 = \underset{R}{C} - CN$$

wherein R is hydrogen, a lower alkyl group having from 1 to 4 carbon atoms, or a halogen, and

B. up to 50% by weight based on the combined weight of (A) and (B) of at least one member selected from the group consisting of:

1. styrene,

2. an ester having the structure

$$CH_2 = \underset{R_1}{C} - COOR_2$$

wherein R_1 is hydrogen, an alkyl group having from 1 to 4 carbon atoms, or a halogen, and R_2 is an alkyl group having from 1 to 6 carbon atoms,

3. an alpha-olefin having the structure

$$CH_2 = \underset{R''}{\overset{R'}{C}}$$

wherein R′ and R″ are alkyl groups having from 1 to 7 carbon atoms,

4. a vinyl ether selected from the group consisting of methyl vinyl ether, ethyl vinyl ether, the propyl vinyl ethers, and the butyl vinyl ethers, and

5. vinyl acetate, and

wherein said monomers are copolymerized in the presence of from 0 to 40 parts by weight of:

C. a rubbery polymer of a conjugated diene monomer selected from the group consisting of butadiene and isoprene and optionally a comonomer selected from the group consisting of styrene and a nitrile monomer having the structure

$$CH_2 = \underset{R}{C} - CN$$

wherein R has the above designation, said rubbery polymer containing from 50 to 100% by weight of polymerized conjugated diene and from 0 to 50% by weight of comonomer.

B 397,027

ROOM TEMPERATURE VULCANIZABLE ORGANOPOLYSILOXANES

Siegfried Nitzsche; Paul Hittmair; Ernst Wohlfarth, and Eckhart Louis, all of Burghausen, Germany, assignors to Wacker Chemie GmbH, Munich, Germany

Continuation of Ser. No. 234,367, March 13, 1972, abandoned. This application Sept. 13, 1973, Ser. No. 397,027

Claims priority, application Germany, Mar. 16, 1971, 2112522

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 G **20 Claims**

Group Art Unit 141

References Cited

UNITED STATES PATENTS

3,032,528	5/1962	Nitzsche et al.	260/46.5 G
3,408,325	10/1968	Hittmair et al.	260/37 SB
3,451,964	6/1969	Creamer	260/46.5 G
3,644,434	2/1972	Hittmair et al.	260/46.5 G
3,647,725	3/1972	Nitzsche et al.	260/46.5 G

1. A room temperature vulcanizable composition which is obtained by admixing in the substantial absence of moisture an essentially linear diorganopolysiloxane having terminal groups which are capable of condensing with an amino-substituted silicon compound selected from the class consisting of silanes, silazanes and siloxanes having at least three silicon-bonded amino groups of the formula $=NCH(CH_3)C_2H_5$ per molecule, said amino-substituted silicon compound is present in an amount of at least 1 mol per gram equivalent of the terminal groups capable of condensation present in the diorganopolysiloxane.

B 390,738

FLAME RESISTANT SYNTHETIC LINEAR POLYESTERS AND SHAPED STRUCTURES MADE THEREOF

Ulrich Bollert, Hofheim/Taunus; Hans-Jerg Kleiner, Bad Soden/Taunus, and Franz Jakob, Hofheim/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Aug. 23, 1973, Ser. No. 390,738

Claims priority, application Germany, Aug. 26, 1972, 2242002

Int. Cl. C08g *17/08*

U.S. Cl. 260—75 P 6 Claims

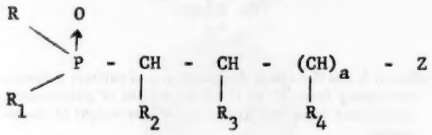
Group Art Unit 143

References Cited

FOREIGN PATENTS OR APPLICATIONS

771,302 8/1971 Belgium

1. Flame-resistant, synthetic, linear and phosphorus-containing polyesters consisting essentially of dicarboxylic acid and diol units and wherein 4 to 15 mole % of the diol units are derived from a diol of the formula



wherein R and R_1 are alkyl or cycloalkyl radicals of up to 12 carbon atoms,

R_2 and R_3 are hydrogen or an alkyl radical of 1 to 4 carbon atoms which may be substituted by hydroxyl,

R_4 is hydrogen or an alkyl radical of 1 to 4 carbon atoms, Z is an alkyl radical of 1 to 4 carbon atoms substituted by 1 or 2 hydroxyl groups,

a is zero to 4, and

the total number of hydroxyl groups on the radicals R_2, R_3 and Z is 2.

B 363,205

POLYOLS CONTAINING KETAL GROUPS AND POLYURETHANES PREPARED THEREFROM

Marius Walter Sorenson, 56 Caladium Ct., Lake Jackson, Tex., 77566; Ross Clinton Whiteside Jr., Rt. 1, Box 98, Angleton, 77515, and Richard Allan Hickner, 334 Linden Ln., Lake Jackson, Tex. 77566

Filed May 23, 1973, Ser. No. 363,205

Int. Cl. C08q *22/14*

U.S. Cl. 260—77.5 AP 12 Claims

Group Art Unit 141

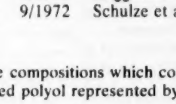
References Cited

UNITED STATES PATENTS

3,420,800	1/1969	Haggis	260/77.5 AM
3,691,135	9/1972	Schulze et al.	260/77.5 AP

1. Curable compositions which comprise

A. a capped polyol represented by the formula



wherein Z is the polyvalent residue which would result from the removal of the hydroxyl groups from an uncapped polyol having from 2 to about 8 hydroxyl groups, an average molecular weight of from about 260 to about 3,000;

wherein R_3 is a hydrocarbon group having from 1 to about 6 carbon atoms and each R_1 and R_2 is independently hydrogen, a hydrocarbon group having from 1 to about 6 carbon atoms and R_1 and R_2 can collectively be the group $—CH_2—CH_2—CH_2—CH_2—$, *x* has a value of from 2 to about 8, and

B. an organic polyisocyanate in proportions so as to provide an NCO:hydroxyl group ratio contained in the uncapped polyol of from about 0.7:1 to about 1.4:1.

B 416,710

ONE-PACKAGE POLYURETHANE COATINGS

Benny Gene Barron, and Russell Henry Cramm, both of P.O. Box 1967, Lake Jackson, Tex. 48640

Filed Nov. 16, 1973, Ser. No. 416,710

Int. Cl. C08g *22/14*

U.S. Cl. 260—77.5 AP 10 Claims

Group Art Unit 141

References Cited

UNITED STATES PATENTS

3,591,547	7/1971	Boudakian et al.	260/77.5 AP

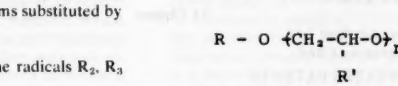
1. A one-package polyurethane coating comprising

A. an NCO-containing prepolymer which is the reaction product of

1. A polyol resulting from the reaction of

a. a polyhydroxyl-containing initiator compound containing from 2 to about 4 hydroxyl groups or a mixture of such compounds, with

b. from about 1 to about 3 moles per hydroxyl group contained in (A-1-a) of a glycidyl ether selected from glycidyl ethers represented by the general formula



wherein R is an aliphatic hydrocarbon radical having from about 4 to about 10 carbon atoms, R′ is hydrogen or a methyl or ethyl group and n has a value of 0 to 2 provided that when n is zero, R contains at least 6 carbon atoms, and mixtures of such glycidyl ethers; with

2. an organic diisocyanate in quantities so as to provide an NCO:OH ratio of from about 1.5:1 to about 2:1;

B. optionally, as a viscosity reducing component, from 0 to about 50 percent by weight of an organic hydrocarbon solvent, and

C. a catalytic quantity of a catalyst for urethane formation.

B 279,583

POLYMERIZATION OF CAPROLACTAM

Thomas J. Howell, Brown Ave., Cornwells Heights, Pa.

Filed Aug. 10, 1972, Ser. No. 279,583

Int. Cl. C08g *20/14*

U.S. Cl. 260—78 L 4 Claims

Group Art Unit 143

References Cited

UNITED STATES PATENTS

3,477,899	11/1969	Kubitzek et al.	260/78 L X
3,542,743	11/1970	Flamand	260/78 L
3,553,286	1/1971	Murata et al.	260/78 L X

1. The method of producing a fiber-forming polymer which comprises melt polymerizing caprolactam with a dilithium salt of unsubstituted 3,5-disulfobenzoic acid moiety in a reactor in the ratio of 20 to 45 millimoles of salt per kilogram of caprolactam.

B 360,208
PROCESS FOR PREPARING WHOLLY AROMATIC POLYAMIDES IN THE PRESENCE OF AN ARYL SULFONE

Rufus S. Jones, South Morris St., Box 372A, R.D. 1, Dover, N.J.

Filed May 14, 1973, Ser. No. 360,208
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R 10 Claims
Group Art Unit 143

References Cited

UNITED STATES PATENTS

3,063,966	11/1962	Kwolek et al.	260/78 R
3,329,653	7/1967	Beavers et al.	260/78 R

1. A method for preparing high molecular weight wholly carbocyclic aromatic polyamides comprising heating in the substantial absence of oxygen a carbocyclic aromatic dicarboxylic acid and a carbocyclic aromatic diamine in about a mole to mole ratio in the presence of an aryl sulfone to a temperature above the melting point of said sulfone to just below the decomposition temperature of the reactants, and continuing said heating with the removal of condensation by-products for a time sufficient to form a polymer having an inherent viscosity of at least 0.4 as measured using a solution of 0.4 grams of product per 100 milliliters of concentrated aqueous sulfuric acid, 97–99 percent by weight, at 25°C., said aryl sulfone being present in an amount corresponding to 100 to 2500 weight percent of the polymer.

B 262,599
POLY(META-PHENYLENE ISOPHTHALAMIDE)POWDER

John William Turnbull, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 14, 1972, Ser. No. 262,599
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 S 6 Claims
Group Art Unit 143

References Cited

UNITED STATES PATENTS

3,562,223	2/1971	Bargain et al.	260/78 UA
3,669,930	6/1972	Asahara et al.	260/78 UA

1. A coalescible and densifiable powder of poly(meta-phenylene isophthalamide) characterized by a density of at least about 1.0 g./cc. when pressed into a preform and a density when sintered of at least about 1.24 g./cc. produced by adding a solution of between about 0.5 and about 3.5 percent by weight, based upon the total weight of said solution, of poly(meta-phenylene isophthalamide) in a solvent selected from any of the group consisting of dimethylformamide and dimethylacetamide to water to form a slurry and agitating said slurry and thereafter filtering said slurry to recover solid particles of said poly(meta-phenylene isophthalamide), and washing and drying said solid particles and comminuting said solid particles whereby to provide said coalescible and densifiable powder of poly(meta-phenylene isophthalamide).

B 317,080
IMPROVEMENT IN THE PROCESS FOR THE PREPARATION OF THERMOSETTING POLYMERS FROM N,N-BIS-MALEIMIDE

Bernard Gerard, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Dec. 20, 1972, Ser. No. 317,080
Claims priority, application France, Dec. 27, 1971, 71.46753
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 UA 6 Claims
Group Art Unit 143

References Cited

UNITED STATES PATENTS

2,988,782	6/1961	Parish et al.	260/78 S
3,094,511	6/1963	Hill et al.	260/78 R
3,228,902	1/1966	Beste	260/78 S
3,287,324	11/1966	Sweeny	260/78 R
3,679,636	7/1972	Vogelfanger	260/78 R

1. In a continuous process for the preparation of a thermosetting prepolymer by heating a mixture of an N,N'-bis-maleimide and bis-(4-amino-phenyl)-methane at a temperature between 95° and 250°C., the improvement wherein the bis-maleimide, as a particulate solid, and the diamine, in the molten state, are mixed by introducing separately into a kneader equipped with an extrusion screw, the molar ratio of bis-maleimide to diamine being from 1 to 5, advancing, polymerising and collecting the extruded prepolymer.

B 233,741
ALTERNATING COPOLYMERS OF ETHYLENE/ALKYL ACRYLATES/CURE-SITE MONOMERS AND A PROCESS FOR THEIR PREPARATION

Anestis Leonidas Logothetis, Louisville, Ky., assignor to E. I. duPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 132,177, April 7, 1971, abandoned. This application Mar. 10, 1972, Ser. No. 233,741
Int. Cl. C08f *15/00*
U.S. Cl. 260—78.5 R 14 Claims
Group Art Unit 144

References Cited

UNITED STATES PATENTS

3,183,217	5/1965	Serniuk	260/85.5
3,413,272	11/1968	Rees	260/78.5
3,647,771	3/1972	Nakaguchi	260/86.7
3,700,648	10/1972	Hirooka	260/63 R

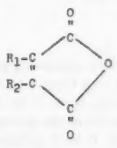
FOREIGN PATENTS OR APPLICATIONS

1,123,723	8/1968	Great Britain	260/63

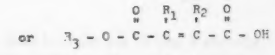
1. An amorphous substantially linear atactic alternating copolymer having a glass transition temperature less than about 0°C. and an inherent viscosity of about 1–6 (measured on a 0.1 wt. % solution in chloroform at 30°C.), said copolymer having repeating units consisting essentially of of:

—A—B—

wherein A is independently selected from at least one alkyl acrylate, said alkyl group having from 1–8 carbon atoms and an acrylic cure-site monomer, and B is ethylene, said cure-site monomers having the formulae:



or



wherein R_1 and R_2 are independently selected from H, Cl, Br, a C_1–C_8 alkyl, phenyl, or naphthyl, and R_3 is hydrogen, C_1–C_{10} alkyl, phenyl or naphthyl, substituted phenyl or naphthyl

where substituents are alkyl C_1–C_{10}, halogen, nitro, and C_1–C_{10} alkoxy groups,
the mole percent alkyl acrylate plus cure-site monomer in the copolymer is about 50, the balance being ethylene.

B 382,018
POLY(p-BENZENESULFONAMIDE)

George E. Hulse, 227 Maurice Ct., Pittsburgh, Pa. 15235, and R. James Kersting, 5439 Pocusset Street, Pittsburgh, Pa. 15217

Filed July 23, 1973, Ser. No. 382,018
Int. Cl. C08g *25/00*
U.S. Cl. 260—79.3 R **2 Claims**
Group Art Unit 144

References Cited

UNITED STATES PATENTS

3,371,073	2/1968	Smith	260/79.3 R
3,579,475	5/1971	Jones et al.	260/79.3 R
3,696,092	10/1972	Tesoro	260/79.3 R
3,709,844	1/1973	Herweh et al.	260/79.3 R

1. A process for preparing poly(p-benzenesulfonamide) comprising:
a. heating for at least 1 hour at a temperature of 180° to 210°C. in the absence of air, a melt of a compound having the general formula, $R'R''N{\cdot}SO_2{\cdot}C_6H_4{\cdot}NH_3X$, where X is Br or Cl; and R′ and R″ may be the same or different and are H, alkyl having from 1–4 carbon atoms, or R′ and R″ together comprise a cyclic alkylene;
b. dissolving the heated melt in aqueous alkali; and
c. acidifying the solution by adding acid to a pH of 4–6, whereby the poly(p-benzenesulfonamide) precipitates.

B 245,194
THREE-COMPONENT ACCELERATOR SYSTEM

Frank S. Maxey, 1455 Multnoma Ave., Akron, Ohio 44305

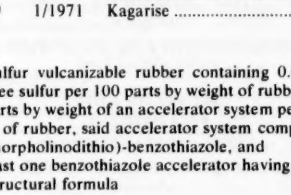
Filed Apr. 18, 1972, Ser. No. 245,194
Int. Cl. C08c *11/56, 11/62;* **C08d** *9/00*
U.S. Cl. 260—79.5 C **8 Claims**
Group Art Unit 144

References Cited

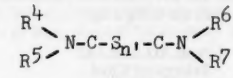
UNITED STATES PATENTS

3,491,069	1/1970	Brooks	260/79.5
3,558,739	1/1971	Kagarise	260/79.5

1. A sulfur vulcanizable rubber containing 0.00 to 3.25 parts of free sulfur per 100 parts by weight of rubber and 0.50 to 5.50 parts by weight of an accelerator system per 100 parts by weight of rubber, said accelerator system comprising
A. 2-(morpholinodithio)-benzothiazole, and
B. at least one benzothiazole accelerator having the following structural formula



wherein R and R^1 are selected from the group consisting of hydrogen nitro, chloro, alkyl radicals having from 1 to 4 carbon atoms and alkoxy radicals having from 1 to 4 carbon atoms and wherein R^2 is selected from the group consisting of alkyl radicals having from 1 to 6 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms, aralkyl radicals having from 7 to 13 carbon atoms and aryl radicals having from 6 to 12 carbon atoms, wherein R^3 is selected from hydrogen and the radicals for R^2, and R^2 and R^3 can be joined through a member selected from the group consisting of $-CH_2-$, $-O-$ and $-S-$ to constitute with the attached nitrogen group of heterocyclic radical and
C. a thiuram accelerator having the following structural formula



(II)

wherein R^4 and R^6 are selected from the group consisting of alkyl radicals having from 1 to 4 carbon atoms, cycloalkyl radicals having from 5 to 12 carbon atoms and aralkyl radicals having from 7 to 13 carbon atoms, R^5 and R^7 are selected from the group consisting of R^4, R^6 and aryl radicals having from 6 to 12 carbon atoms and R^4 and R^5, and R^6 and R^7 can be joined through a member of the group consisting of $-CH_2-$, $-O-$ and $-S-$ to constitute with the attached nitrogen group a heterocyclic radical and n' is an integer of a value from 1 to 4, wherein the weight ratio of A/B/C is 20 to 70/10 to 60/10 to 60 based on 100 parts by a weight of A, B and C and wherein the sum of the weights of the accelerator system and the sulfur is from 2.25 to 5.50 parts by weight per 100 parts by weight of rubber.

B 024,018
TERPOLYMER-BUTADIENE-CARBORANYL METHACRYLATE, AND ACRYLIC ACID

Chester W. Huskins, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 30, 1970, Ser. No. 24,018
Int. Cl. C07f *5/02*
U.S. Cl. 260—80.7 **3 Claims**
Group Art Unit 223

References Cited

UNITED STATES PATENTS

3,183,216	5/1965	Cohen et al.	260/83.5

1. A method of making a terpolymer comprised of the monomers consisting of carboranyl methacrylate, butadiene, and acrylic acid, said method comprising the completing of the process steps of combining and reacting a predetermined amount of said monomers together in an aqueous mixture containing a polymerization initiator, a chain terminating agent, and an emulsifier, said polymerization initiator being the free radical initiator azo-bis-isobutyronitrile, said chain terminating agent being dodecylmercaptan, and said emulsifier being the quaternary ammonium chloride compound, benzylcetyldimethyl-ammonium chloride, said reacting allowed to proceed while under agitation action to form said terpolymer, and separating said terpolymer thus formed.

3. The product made by the method of claim 2 wherein said terpolymer is comprised of the monomer carboranyl methacrylate in amounts from about 15 to about 75 percent by weight of said terpolymer, the monomer butadient in amounts from about 10 to about 80 percent by weight of said terpolymer, and the monomer acrylic acid in amounts from about 2 to about 20 percent by weight of said terpolymer.

B 342,423
PROCESS FOR PREPARING ETHYLENE/PROPYLENE/1,4-HEXADIENE ELASTOMERIC TERPOLYMERS USING CATALYST PREPARED IN A WIPED-WALL CATALYST PREMIXER

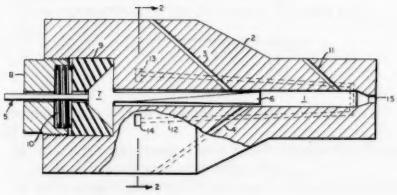
Herbert Felix Mc Shane, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 19, 1973, Ser. No. 342,423
Int. Cl. C08f 15/40, 17/00, 19/00
U.S. Cl. 260—80.78 17 Claims
Group Art Unit 144

References Cited

UNITED STATES PATENTS

3,072,464	1/1963	Akaboshi et al.	260/95 C
3,205,216	9/1965	McManimie et al.	260/94.9 B
3,341,503	9/1967	Paige et al.	260/80.78
3,354,136	11/1967	Crawford	260/93.5 R
3,469,948	9/1969	Anderson et al.	260/94.9 B
3,534,007	10/1970	Hoffman, Jr. et al.	260/80.78
3,600,364	8/1971	Mirza et al.	260/80.78
3,635,919	1/1972	Goffinet Jr.	260/88.2 R
3,637,616	1/1972	Peterson	260/88.2 R
3,681,307	8/1972	Wismer et al.	260/80.78
3,681,308	8/1972	Irvin et al.	260/80.78
3,706,719	12/1972	Goffinet Jr.	260/80.78



1. In a continuous process for the solution interpolymerization of ethylene, propylene, and 1,4-hexadiene monomers in the reactor and in the presence of a coordination catalyst prepared from $VOCl_3$ and R_xAlCl_{3-x}, where R is a C_4 to C_{12} and is an alkyl group having a β-alkyl substituent and x is about 1.6 to 2.0, the improvement wherein $VOCl_3$ and R_xAlCl_{3-x} are continuously premixed in solvent in the absence of monomer in a wiped-wall catalyst premixer to prepare catalyst solution having an aluminum to vanadium atomic ratio of about 1.6 to 2.8 and a concentration of about 20 to 50 millimoles vanadium per liter of solvent, and the premixed catalyst solution is continuously injected into the reactor as it is formed.

B 415,847
THERMOSET COATINGS FROM NON-REACTIVE POLYMERS

Donald D. Carlos, and Darrell D. Hicks, P.O. Box 99038, both of Jeffersontown, Ky. 40299

Filed Nov. 14, 1973, Ser. No. 415,847
Int. Cl. C08f 29/50, 45/28, 45/34
U.S. Cl. 260—86.1 E 7 Claims
Group Art Unit 145

References Cited

UNITED STATES PATENTS

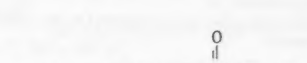
3,663,467	5/1972	Albright	260/86.1 E
3,763,117	10/1973	McKenna et al.	260/86.1 E
3,780,003	12/1973	Seymour et al.	260/86.1 E

OTHER PUBLICATIONS

"Macromolecular Syntheses," Overberer, Ed., 1, p. 5, (Wiley & Sons, 1963).

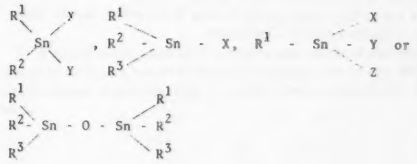
1. A thermoset coating composition comprising:

A. a co-polymer prepared by copolymerizing from about 10% to about 60% by weight, based upon the total co-polymer composition, of alpha, beta, ethylenically unsaturated, aliphatic, hydroxy-containing monomers; at least 1 mol of an ester monomer per mol of hydroxy monomer, wherein the ester monomer has the general formula:

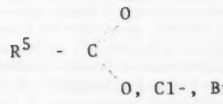


wherein R is an alkyl group having 5 or less carbon atoms; and the remainder, if any, being another monomer co-polymerizable therewith;

B. a catalyst selected from the group consisting of:



wherein R^1, R^2 and R^3 are 1 to 18 carbon atom alkyl or acyl groups and wherein X, Y, and Z are



Cl—, Br—, I—, or —OR^6, wherein R^5 and R^6 are 1 to 18 carbon alkyl groups; and

C. a solvent therefor.

B 291,694

SHAPED ARTICLES OF POLYVINYLIDENE FLUORIDE

Hajime Ishii; Nubuo Bannai, both of 16 Machara, Nishiki-Machi and Sadao Nishita, 175-1 Kaminakada, Nishiki-Machi, all of Iwake-shi, Fukushima-ken, Japan

Division of Ser. No. 03,204, Jan. 15, 1970, Pat. No. 3,707,592, and a continuation-in-part of Ser. No. 501,888, Oct. 22, 1965, abandoned. This application Sept. 22, 1972, Ser. No. 291,694

Int. Cl. C08f 3/22

U.S. Cl. 260—92.1 3 Claims

Group Art Unit 144

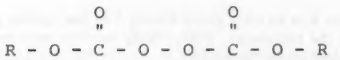
References Cited

UNITED STATES PATENTS

2,435,537	2/1948	Ford et al.	260/92.1 R
3,012,021	12/1961	Hauptschein	260/92.1 R
3,031,437	4/1962	Iserson	260/92.1 R
3,475,396	10/1969	McCain et al.	260/92.1 R
3,553,185	1/1971	Amagi et al.	260/92.1 R
3,574,178	4/1971	Toyoda et al.	260/92.1 R
3,707,592	12/1972	Ishii et al.	264/210 F

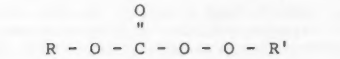
1. A shaped article of polyvinylidene fluoride having improved heat-resistance, mechanical stability, and dimensional stability, said shaped article having been prepared by polymerizing vinylidene fluoride at a temperature between 0° and 30°C in a water medium in the presence of a catalyst selected from the group consisting of

1. a dialkyl peroxydicarbonate represented by the following general formula



wherein R is a primary alkyl group having 1–4 carbon atoms, or a secondary alkyl group having 3–6 carbon atoms, and

2. a dialkyl peroxy carbonate



wherein R is a primary alkyl group having 1 to 3 carbon atoms or a secondary alkyl group having 4 to 6 carbon atoms and R′ is a primary alkyl group having 1 to 3 carbon atoms or a secondary alkyl group having 3 to 5 carbon atoms, and in the presence of a chain transfer agent selected from the group consisting of chloroform, n-hexane, and cyclohexane to control the degree of polymerization, thereby obtaining a polyvinylidene fluoride resin having a melting point of between 185° and 190°C, a crystallization temperature of from 135° to 146°C, and an inherent viscosity of from 0.4 to 1.20; and melt extruding said polymer at a temperature of about 250°C and above to produce a pre-formed article of a film or fiber and stretching the pre-formed article at a temperature between 80° and 130°C and at a draw ratio of at least 150 percent to form a film or fiber having an intensity ratio of at most 1.3.

B 314,255

ADJUVANT FOR IMPROVING THE POLYMERISATION OF ETHYLENE-HYDROCARBONS

Henri Fassy, Jurancon; Philippe Lalet, Orthez, and Andre Miletto, Pau, all of France, assignors to Societe Aquitaine Total Organico, Tour Aquitai, France

Filed Dec. 11, 1972, Ser. No. 314,255

Claims priority, application France, Dec. 9, 1971, 71.44175

Int. Cl. C08f 1/60, 1/62, 3/30

U.S. Cl. 260—92.8 R 12 Claims

Group Art Unit 144

References Cited

UNITED STATES PATENTS

3,520,867	7/1970	Lo Monaco et al.	260/92.8 R
3,637,622	1/1972	Lo Monaco et al.	260/92.8 R
3,644,317	2/1972	Lo Monaco et al.	260/92.8 R

OTHER PUBLICATIONS

Chemical Abstracts 31, 6956 (1937).

Chemical Abstracts 54, 14754g (1960).

1. In a process of polymerizing an ethylene hydrocarbon or vinyl chloride employing a redox catalyst, wherein one component of said redox catalyst is a hydroperoxide, organic peracid or mixture thereof and the other component is SO_2 or an SO_2 liberating compound, the improvement which comprises additionally employing an adjuvant selected from the group consisting of alkali metal amide, alkaline earth metal amide, alkali metal amido-sulfinate, alkaline earth metal amido-sulfinate, ammmonium sulfite, and mixtures thereof.

B 415,124

PREVENTION OF POLYMER BUILD UP IN REACTORS USED FOR VINYL CHLORIDE POLYMERIZATION

Robin Henry Burgess, Hertford, and Richard William Tomlinson, Manchester, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Nov. 12, 1973, Ser. No. 415,124

Claims priority, application Great Britain, Nov. 20, 1972, 53489/72

Int. Cl. C08f 1/11

U.S. Cl. 260—92.8 W 12 Claims

Group Art Unit 144

References Cited

UNITED STATES PATENTS

3,515,709	6/1970	Nelson et al.	260/92.8

1. A process for the production of vinyl chloride polymers which comprises polymerising under conditions of vigorous agitation vinyl chloride, or vinyl chloride and up to 20 percent by weight thereof of at least one ethylenically unsaturated monomer copolymerisable therewith, in aqueous dispersion, in the presence of a polymeric imine selected from the group consisting of polymeric ethylene imine and polymeric substituted ethylene imines wherein the substitution is essentially inert to the vinyl chloride polymerisation, the pH of the polymerisation medium being maintained at at least 4 for all or for a substantial period of the polymerisation.

B 468,198

PREPARATION OF SOL CHLOROPRENE POLYMERS

Ausat Ali Khan, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 8, 1974, Ser. No. 468,198

Int. Cl. C08d *3/14*; **C08f** *3/20, 15/24*

U.S. Cl. 260—92.3 **8 Claims**

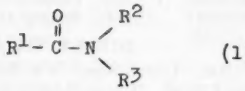
Group Art Unit 144

References Cited

UNITED STATES PATENTS

3,147,318	9/1964	Jungk	260/890
3,222,334	12/1965	Demme	260/84.7
3,300,433	1/1967	Apotheker	260/29.7
3,378,538	4/1968	Sparks	260/92.3
3,392,134	7/1968	Apotheker	260/29.7
3,686,156	8/1972	Hagman	260/92.3
3,775,388	11/1973	Khan	260/86.3 R
3,775,390	11/1973	Khan	260/92.3

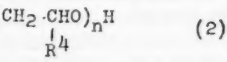
1. In the process of polymerizing in the presence of a C_8—C_{20} alkyl mercaptan in aqueous emulsion at a pH of about 10–13 chloroprene containing from 0 to about equal weight of a copolymerizable monomer at a temperature from the freezing point of the emulsion to about 52°C., the improvement of having present in the emulsion about 0.05–1 part by weight per 100 parts of the starting monomer, of an amide having the following Formula (1)



(1)

wherein R^1 is a C_7—C_{19} alkyl or alkenyl,

R^2 is represented by the following Formula (2):



(2)

wherein n is a number having an average value of 1 to about 50, and

R^4 in each parenthetical unit is independently of any other such unit hydrogen or methyl; and

R^3 is hydrogen, phenyl, benzyl, a C_1—C_5 alkyl, or a radical of the above Formula (2);

with the provisos that when R^3 has the above Formula (2), the sum of the average values of n in R^2 and R^3 is at most about 50; and when R^1 is alkenyl, the double bond is separated from the nitrogen atom by at least one saturated carbon atom.

B 336,652

PROCESS FOR MODIFYING DIENE POLYMERS

Anne C. Udding, 3 Badhuisweg, Amsterdam, Netherlands

Filed Feb. 28, 1973, Ser. No. 336,652

Claims priority, application Netherlands, Apr. 24, 1972, 7205492

Int. Cl. C08d *5/02, 5/04*

U.S. Cl. 260—94.7 N **6 Claims**

Group Art Unit 144

References Cited

UNITED STATES PATENTS

3,341,487	9/1967	Albert	260/84.7

OTHER PUBLICATIONS

Chemical Abstract – Vol. 73, 1970 – 36263j.

Chemical Abstract – Vol. 33, 1939 – 9300.

1. A process for modifying polyisoprene into products which can be processed with a filler to unvulcanized polymers having improved mechanical properties which process comprises reacting said polymer with from about 0.05 to about 5% by weight on polymer of a mono aryl hydroxylamine derivative of up to fourteen carbon atoms in the absence of those aldehydes or ketones which, in situ, form nitrones with the said hydroxylamine derivatives, at a temperature from about 50°–125°C.

B 190,679

MIXED CHROMIUM-CONTAINING AZO DYESTUFFS CONTAINING, PER ATOM OF CHROMIUM, ONE MOLECULE OF AN O,O'-DIHYDROXY-SULPHOPHENYLENE-AZO-NAPHTHALENE AND ONE MOLECULE OF AN -O-HYDROXYPHENYLENE-AZO-ACETOACETAMIDE

Arthur Buehler, Im Lichs 9, Rheinfelden, and Hans-Ulrich Schuetz, Wittlingerstrasse 158, Basel, both of Switzerland

Continuation-in-part of Ser. No. 820,334, April 29, 1969, abandoned. This application Oct. 19, 1971, Ser. No. 190,679

Claims priority, application Switzerland, May 14, 1968, 7130/68

Int. Cl. C09b *45/06*; **D06p** *3/00, 3/04*

U.S. Cl. 260—145 A **7 Claims**

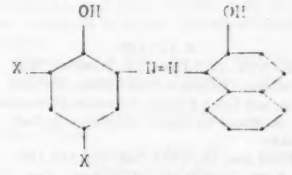
Group Art Unit 127

References Cited

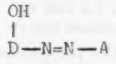
UNITED STATES PATENTS

2,012,779	8/1935	Straub et al.	260/145 A
2,674,515	4/1954	Widmer et al.	260/145 A
2,776,956	1/1957	Zickendraht et al.	260/145 A
2,806,760	9/1957	Brassel et al.	260/145 A UX
2,814,614	11/1957	Zickendraht	260/145 A
2,820,784	1/1958	Zickendraht et al.	260/151
2,855,392	10/1958	Buehler et al.	260/145 A
3,203,948	8/1965	Neier	260/145 A
3,221,003	11/1965	Scholl et al.	260/145 A
3,314,932	4/1967	Scholl et al.	260/145 A

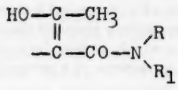
1. A metal compound that contains one atom of chromium bound in complex union with one molecule each of two different monoazo dyestuffs, one of which corresponds to the formula



in which one X represents nitro and the other X is sulphonic acid, and the other monoazo dyestuff corresponds to the formula



wherein D is selected from the group consisting of phenyl and phenyl substituted by up to three groups selected from the group consisting of bromine, nitro, C_{1-5}alkyl, C_{1-5}alkoxy, C_{1-4}alkanoylamino, sulfonamido, N-phenylsulfonamido and N-(carboxyphenyl)-sulfonamido; and A is an acetoacetamide group of the formula



wherein R and R_1 are each independently hydrogen, C_{1-5}alkyl, C_{1-5}alkoxyalkyl, phenyl-C_{1-5}alkyl, cyclopentyl, cyclohexyl, phenyl and phenyl substituted by up to two groups selected from the group consisting of C_{1-5}alkoxy, C_{1-5}alkyl, chlorine and bromine.

B 348,083
QUINAZOLONE CONTAINING PHENYL-AZO-PYRIDINE COMPOUNDS

Peter Dimroth, Ia Leuschnerstrasse, 6700 Ludwigshafer, Germany

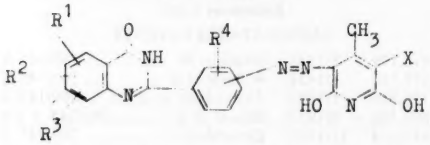
Filed Apr. 4, 1973, Ser. No. 348,083
Int. Cl. C09b *29/36*
U.S. Cl. 260—154 **4 Claims**
Group Art Unit 127

References Cited

FOREIGN PATENTS OR APPLICATIONS

961,088 6/1964 Great Britain 260/154

1. A quinazolone azo pigment of the formula



in which:
R^1 is hydrogen, chloro, bromo or nitro;
R^2 is hydrogen or chloro;
R^3 is hydrogen or chloro;
R^4 is hydrogen, chloro or methyl; and
X is cyano or carbamoyl.

B 327,109
PHENYL-AZO-INDOLE COMPOUNDS

Gerhard Wolfrum, Bergisch-Neukirchen; Richard Sommer, Leverkusen, and Erich Klauke, Odenthal-Hahnenberg, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

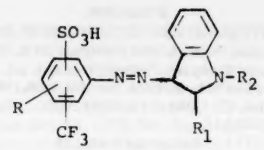
Filed Jan. 26, 1973, Ser. No. 327,109
Claims priority, application Germany, Jan. 26, 1972, 2203460
Int. Cl. C09b *29/36*
U.S. Cl. 260—165 **1 Claim**
Group Art Unit 127

References Cited

UNITED STATES PATENTS

1,835,393 12/1931 Hentrich et al. 260/165
3,255,173 6/1966 Dehnert et al. ..... 260/165 X
3,657,217 4/1972 Hiller et al. 260/165

1. Dyestuff of the formula



wherein
R is hydrogen, methyl, methoxy, chloro or bromo;
R_1 is C_1—C_4—alkyl or phenyl;
R_2 is hydrogen, C_1—C_4—alkyl or C_1—C_4—alkyl substituted by cyano, carbonamido, or carboxy.

B 255,756
BORIC ACID COMPLEX

John K. Rogers, 3361 Woodley Ct., Toledo, Ohio 43606

Filed May 22, 1972, Ser. No. 255,756
Int. Cl. C07c *69/20*
U.S. Cl. 260—209 R **1 Claim**
Group Art Unit 124

References Cited

UNITED STATES PATENTS

2,453,108 11/1948 Curtis ..... 260/209 R
3,231,561 1/1966 Brunelle et al. ..... 260/209 R

OTHER PUBLICATIONS

Walker, "Chem. Abst." Vol. 64, 1966, p. 3,820 (e).
Black et al., "Chem. Abst." Vol. 64, 1966, p. 7,941 (b).

1. Galactoglucomannan-boric acid complex stable to alkaline hydrolysis.

B 371,085
5''-AMINO-4',5''-DIDEOXYAMBUTYROSIN

Takayuki Naito; Susumu Nakagawa, both of Tokyo, and Soichiro Toda, Koshigaya, all of Japan, assignors to Bristol-Myers Company

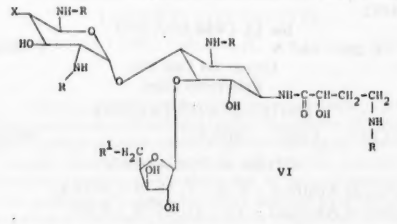
Filed June 15, 1973, Ser. No. 371,085
Int. Cl. C07c *95/04*
U.S. Cl. 260—210 AB **5 Claims**
Group Art Unit 124

References Cited

UNITED STATES PATENTS

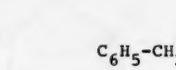
3,784,541 1/1974 Culbertson et al. ..... 260/210 AB
3,792,037 2/1974 Kawaguchi et al. ..... 260/210 AB

1. A compound having the formula



VI

in which X is H, R is H or



and R^1 is N_3 or NH_2; or a pharmaceutically acceptable acid addition salt thereof.

B 391,184

THIOLATION OF POLYSACCHARIDES

Donald Trimnell; Baruch S. Shasha, both of Peoria, and William M. Doane, Morton, all of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 24, 1973, Ser. No. 391,184
Int. Cl. C08b *5/14, 19/00*
U.S. Cl. 260—216 **7 Claims**
Group Art Unit 141

References Cited

UNITED STATES PATENTS

3,007,918	11/1961	Benesch et al.	260/212
3,666,738	5/1972	Burke et al.	260/216
3,666,739	5/1972	Burke et al.	260/216
3,689,466	9/1972	Bridgeford et al.	260/216
3,756,966	9/1973	Lamberti	260/233.5

OTHER PUBLICATIONS

Trimnell et al., Carbohyd. Res., 22 (1972) pg. 351–359.

1. A method of preparing thiolated polysaccharides comprising the following steps:

a. pyrolyzing pyridene free dithiobis(thioformate derivatives of polysaccharides having a dithiobis(thioformate) degree of substitution of from 0.02 to 1.5 at a temperature of from 100° to 200° C.;

b. saponifying the pyrolyzed product resulting from step (a); and

c. neutralizing, recovering, and drying the saponified product resulting from step (b).

B 408,030

PROCESS FOR DEPOLYMERIZING AMYLACEOUS POLYMERS

Edwin L. Speakman, 806 Park Pl., Clinton, Iowa 52732

Filed Oct. 19, 1973, Ser. No. 408,030
Int. Cl. C08b *19/04*
U.S. Cl. 260—233.3 R **16 Claims**
Group Art Unit 141

References Cited

UNITED STATES PATENTS

3,539,366	11/1970	Ewing	260/233.3
3,655,644	4/1972	Durand	260/233.3

1. A process for the partial depolymerization of amylaceous polymers in aqueous dispersion comprising (1) reacting the amylaceous polymers with hydrogen peroxide in the presence of dissolved copper ions at pH 5–8.5 to produce a reaction mixture of amylaceous polymer fragments including shortened amylaceous polymer chains containing a terminal carboxylic acid group and (2) converting the terminal carboxylic acid groups on the amylaceous polymer fragments to ionizable salt form throughout the reaction period by the periodic or continuous addition of alkali to the reaction mixture.

B 369,607

1-HETEROCYCLIC CARBAMOYL -N- CARBAMOYLOXY FORMIMIDATES

Russell F. Bellina, Wilmington, Del., assignor to E. I. du Pont de Nemours & Company, Wilmington, Del.

No Drawing. Division of Ser. No. 55,290, July 15, 1970, Pat. No. 3,755,403. This application June 13, 1973, Ser. No. 369,607
Int. Cl. C07d *41/02*
U.S. Cl. 260—239 BF **3 Claims**
Group Art Unit 121

References Cited

UNITED STATES PATENTS

3,530,220	9/1970	Buchanan	424/320
3,557,190	1/1971	Buchanan	260/453 R
3,576,834	4/1971	Buchanan	260/453 R
3,694,431	9/1972	Fuchs et al.	260/293.86

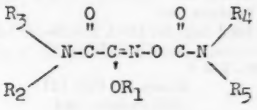
FOREIGN PATENTS OR APPLICATIONS

1,101,785	1/1968	Great Britain	260/453 R
1,467,548	12/1966	France	260/453 R

OTHER PUBLICATIONS

C.A. 71 : 70150 P (1969) Breck–Buehler et al.

1. A compound of the formula



where:

R_1 is glycidyl; alkyl of 1 through 4 carbon atoms; alkenyl of 3 through 4 carbon atoms; alkynyl of 3 through 4 carbon atoms; cycloalkyl of 3 through 6 carbon atoms; or alkyl of 1 through 4 carbon atoms substituted with 1 through 3 halogen atoms or with a methoxy, ethoxy, nitro, cyano, hydroxy, methylthio, carboxy, carbomethoxy, carboethoxy, amino, methylamino, ethylamino, dimethylamino, methylethylamino, methylpropylamino, or diethylamino group;

R_2 and R_3 are taken together and are alkylene of 4 through 6 carbon atoms;

R_4 is hydrogen, alkyl of 1 through 3 carbon atoms, allyl, or propargyl; and

R_5 is hydrogen or methyl.

B 189,772

PYRAZOLINE BRIGHTENERS

Gunther Boehmke, and Hans Theidel, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 15, 1971, Ser. No. 189,772
Claims priority, application Germany, Oct. 15, 1970, 2050752
Int. Cl. C07d *49/10*
U.S. Cl. 260—239.65 **4 Claims**
Group Art Unit 121

References Cited

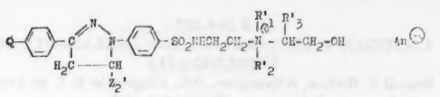
UNITED STATES PATENTS

3,141,879	7/1964	Hausermann et al.	260/247.2
3,629,241	12/1971	Krause et al.	260/239.9

FOREIGN PATENTS OR APPLICATIONS

906,960	9/1962	Great Britain	260/310 D
1,080,963	10/1960	Germany	260/310
1,155,418	4/1964	Germany	260/310
661,139	9/1965	Belgium	260/310
670,161	3/1966	Belgium	260/310
727,656	7/1969	Belgium	

1. Pyrazoline compound of the formula



in which

R'_1 and R'_2 represent hydrogen; C_1-C_4-alkyl radicals which are optionally substituted by chlorine, hydroxyl, nitrile, C_1-C_4-alkoxy, phenoxy or C_2-C_5-alkylcarbonyl groups; cyclohexyl or benzyl radicals, or together with the N atom form a pyrrolidine, piperidine, imidazole or morpholine ring,

R'_3 denotes hydrogen or C_1-C_4-alkyl radicals which are optionally substituted by chlorine, hydroxyl or C_1-C_4-alkoxy groups,

Z'_2 represents hydrogen or C_1-C_4-alkyl radicals and Q represents hydrogen or chlorine.

B 391,210

1-(5-NITROFUR FURYLIDENE)AMINO)-4(AND 5)-PHENYL-2-IMIDAZOLIDINONE

Harry R. Snyder, Jr., Norwick, N.Y., assignor to Morton-Norwich Products, Inc.

Filed Aug. 24, 1973, Ser. No. 391,210

Int. Cl. C07d *49/30*

U.S. Cl. 260—240 A **3 Claims**

Group Art Unit 121

References Cited

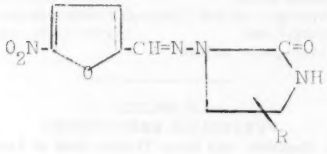
UNITED STATES PATENTS

2,746,960	5/1956	Gever et al.	260/240 A
3,407,195	10/1968	Snyder	260/240 A

OTHER PUBLICATIONS

Chemical Abstracts vol. 77, abst. no. 14746w (1972) (abst. of Pugh et al., J. Med. Chem. 1972, vol. 15, pp. 270–3).

1. A compound of the formula:



wherein R is 4- or 5-phenyl.

B 258,687

(THIOPHOSPHON OTHIC)CEPHALOSPORIN DERIVATIVES

Uwe D. Treuner, Diepenbrockstr. 1, 84 Regensburg, and Hermann Breuer, Schonebergerstr. 34, 8401 Burgweinting, both of Germany

Filed June 1, 1972, Ser. No. 258,687

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **8 Claims**

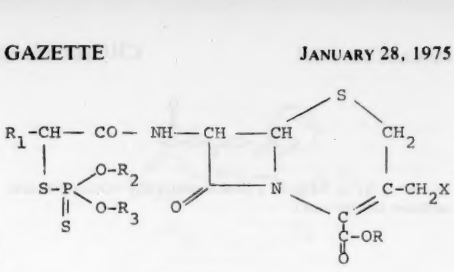
Group Art Unit 122

References Cited

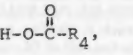
UNITED STATES PATENTS

3,578,661	5/1971	Havranek	260/243 C

1. A compound of the formula



wherein R is hydrogen, lower alkyl, phenyl-lower alkyl, tri(-lower alkyl)silyl, tri(lower alkyl)stannyl,



aluminum, alkali metal, alkaline earth metal or tri(lower alkyl-)amine; R_1 is phenyl, R_2 and R_3 each is lower alkyl, phenyl-lower alkyl R_4 is lower alkyl, or phenyl-lower alkyl; and X is hydrogen, hydroxy or lower alkanoyloxy.

B 425,470

CERTAIN 6,7-DIOXO-2H-PYRROLO-[2,1-B]THIAZENES

Henry Rapoport, Berkeley, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Division of Ser. No. 289,382, Sept. 15, 1972, Pat. No. 3,809,700, which is a division of Ser. No. 48,550, June 22, 1970, Pat. No. 3,714,156. This application Dec. 17, 1973, Ser. No. 425,470

Int. Cl. C07d *93/08*

U.S. Cl. 260—243 R **3 Claims**

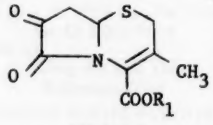
Group Art Unit 121

References Cited

UNITED STATES PATENTS

3,796,711	3/1974	Utne et al.	260/243 R

1. A compound of the formula:



where R_1 is hydrogen, lower alkyl of from one to four carbon atoms, benzyl, p-methoxybenzyl or trichloroethyl.

B 281,341

INTERMEDIATES FOR PRODUCING PROSTAGLANDINS

George E. Just, 499 Mount Pleasant Ave., Westmount, Quebec, Canada, and Chaim Simonovitch, 67 Rothchild St., Rishon-Le-Zion, Israel

Continuation of Ser. No. 103,334, Dec. 13, 1970, abandoned, which is a continuation-in-part of Ser. No. 657,085, July 31, 1967, abandoned. This application Aug. 17, 1972, Ser. No. 281,341

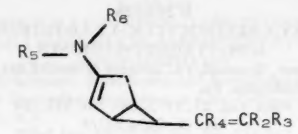
Claims priority, application Great Britain, Aug. 9, 1966, 35550/66; Jan. 24, 1967, 3588/67

Int. Cl. C07d *87/26*

U.S. Cl. 260—247 **2 Claims**

Group Art Unit 122

1. A compound of the formula:



wherein R_2 is alkyl of 4 to 8 carbon atoms, inclusive, wherein R_3 and R_4 are hydrogen or methyl, and wherein R_5 and R_6 together with the nitrogen form morpholino.

B 129,999

2-HALOALKYLAMINO-S-TRIAZINES

Matthias Schwarzmann, 54 Carl-Bosch-Strasse, 6703 Limburgerhof; Guenther Gotsmann, 164 Mundenheimer Strasse; Peter Heinze, 27 Rheinecke, both of 6700 Ludwigshafen, and Ernst Heinrich Pommer, 7 Berliner Platz, 6703 Limburgerhof, all of Germany

Filed Mar. 31, 1971, Ser. No. 129,999

Int. Cl. C07d *55/24*

U.S. Cl. 260—249.6 **5 Claims**

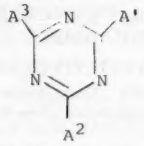
Group Art Unit 121

References Cited

UNITED STATES PATENTS

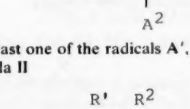
2,947,748	8/1960	Zeitschel	260/249.6 X
3,538,093	11/1970	Mason et al.	260/249.8

1. An s-triazine of the formula



I

wherein at least one of the radicals A′, A^2 and A^3 is a radical of the formula II



II

— the remaining radicals A being alkyl radicals having 1 to 18 carbon atoms, phenyl, dichloroamino, monoalkyl amino having 1 to 2 carbon atoms, alkoxy having 1 to 20 carbon atoms or chloro - and where R′, R^2, R^3 and R^4 are identical or different alkyl radicals having 1 to 20 carbon atoms, or phenyl, R′ and R^2 together, and R^3 and R^4 together may be an alicyclic ring having 6 to 14 carbon atoms, at most 3 of the radicals R′, R^2, R^3 and R^4 are hydrogen, X is chloro or bromo, and one of the radicals R′, R^2, R^3 and R^4 may be alkoxy having 1 to 20 carbon atoms, pyrrolidonyl, imidazolyl or 2-methylimidazolyl.

B 280,015

TETRAALKYL PYRAZINES FROM ALKANOLAMINES BY COPPER-CHROMITE CATALYSIS

Heinz-Werner Voges, and Josef Ewers, both of Dorsten, Germany, assignors to VEBA-Chemie Aktiengesellschaft

Filed Aug. 11, 1972, Ser. No. 280,015

Claims priority, application Germany, Aug. 13, 1971, 2140649

Int. Cl. C07d *51/76*

U.S. Cl. 260—250 B **4 Claims**

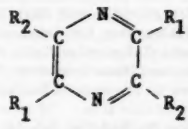
Group Art Unit 122

References Cited

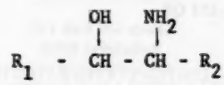
UNITED STATES PATENTS

2,813,869	11/1957	Langdon	260/268

1. Process for preparing 2,3,5,6-tetraalkylpyrazines having the formula



which comprises the step of cyclization by dehydrogenation and dehydration of 1,2-dialkylmonoethanolamines having the formula



wherein R_1 and R_2 represent identical or different C_{1-4} alkyl radicals on copper-chromate catalyst at temperatures of 200° to 300° C, in the presence of 1 to 20 moles of ammonia per mole of 1,2-dialkylmonoethanolamine and in the presence of 0.1 to 20 moles of water vapor per mole of 1,2-dialkylmonoethanolamine; said catalyst consisting essentially of 5–50 wt/% copper, and 1–10 wt/% chromium and aluminum oxide and/or silicon dioxide support.

B 387,790

QUINOXALINYLTHIOALLOPHANATE FUNGICIDES

John Benjamin Adams, Jr., R.D. 2, Box 40, Hockessin, Del. 19707, and Gregory Wayne Schwing, 223 Pinehurst Road, Wilmington, Del. 19803

Filed Aug. 13, 1973, Ser. No. 387,790

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 Q **3 Claims**

Group Art Unit 122

References Cited

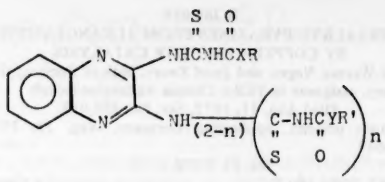
UNITED STATES PATENTS

3,457,272	7/1969	Crook et al.	260/256.4 Q
3,655,893	4/1972	Gier et al.	260/250 Q
3,733,323	5/1973	Douglass	260/250 Q
3,761,475	9/1973	Kurihara	260/250 Q

FOREIGN PATENTS OR APPLICATIONS

1,930,450	11/1970	Germany
2,002,759	9/1970	Germany
1,806,123	6/1969	Germany

1. A compound of the formula



wherein

X is oxygen or sulfur;

Y is oxygen or sulfur;

n is 0 or 1;

R is alkyl of 1 to 4 carbon atoms, allyl or methoxyethyl, and R′ is alkyl of 1 to 4 carbon atoms, allyl or methoxyethyl.

B 252,947

2(1H)-QUINAZOLINONES AND PROCESS THEREFOR

Shigeho Inaba, Takarazuka; Kei Takahashi, Takatsuki; Michihiro Yamamoto, Takarazuka; Kazuo Mori, Kobe; Kikuo Ishizumi, Minoo, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Continuation of Ser. No. 840,856, July 10, 1969, abandoned. This application May 12, 1972, Ser. No. 252,947

Claims priority, application Japan, July 18, 1968, 43-50982; July 18, 1968, 43-50983; Oct. 18, 1968, 43-76377

Int. Cl. C07d *51/48*

U.S. Cl. 260—251 QB **3 Claims**

Group Art Unit 122

References Cited

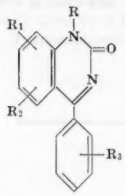
UNITED STATES PATENTS

3,723,432 3/1973 Ott ..... 260/251 QB

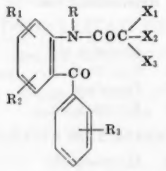
FOREIGN PATENTS OR APPLICATIONS

1,520,743 4/1968 France

1. A process for producing a quinazoline of the formula



wherein R is hydrogen, C_1–$_4$ alkyl, C_2–C_4 alkenyl, benzyl, (C_1–$_4$ alkoxy) C_1–$_4$ alkyl or di(C_1–$_4$ alkyl) amino (C_1–$_4$ alkyl); R_1, R_2 and R_3 are each selected from the group consisting of hydrogen, halogen, C_1–$_4$ alkyl, C_1–$_4$ alkoxy, nitro, C_1–$_4$ alkylthio, C_1–$_4$ alkyl sulfonyl and a trifluoromethyl group, which comprises contacting with ammonia a trihaloacetamidobenzophenone of the formula



wherein each of X_1, X_2 and X_3 is independently a halogen atom; and R, R_1, R_2 and R_3 are as defined above.

B 392,154

5-ALKOXY-5-HETEROCYCLIC-1,2,3,6-TETRAHYDRO-4(5H)-PYRIMIDINETHIONES

Bernard Loev, Broomall, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed Aug. 27, 1973, Ser. No. 392,154

Int. Cl. C07d *51/18*

U.S. Cl. 260—256.5 R **6 Claims**

Group Art Unit 122

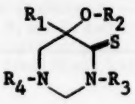
References Cited

UNITED STATES PATENTS

3,510,490 5/1970 D'Amico ..... 260/256.5 R

3,574,213 4/1971 D'Amico ..... 260/256.5 R

1. A compound of the formula



in which:

R_1 is 2-pyridyl, 2-pyrimidyl, 4-pyrimidyl, 2-pyrazinyl, 2-pyrrolyl, 2-quinolyl, 2-thiazolyl or 4-thiazolyl;

R_2 is lower alkyl, allyl or cyclopropanemethyl and

R_3 and R_4 are hydrogen or lower alkyl or a pharmaceutically acceptable acid addition salt thereof

---

B 322,182

TRIAZOYL-NAPHTHALIMIDE BRIGHTENING AGENTS

Alfons Dorlars, Leverkusen, and Carl-Wolfgang Schellhammer, Opladen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 704,524, Feb. 12, 1968, abandoned. This application Jan. 8, 1973, Ser. No. 322,182

Claims priority, application Germany, Feb. 21, 1967, 51581

Int. Cl. C07d *39/00*

U.S. Cl. 260—281 **11 Claims**

Group Art Unit 122

References Cited

UNITED STATES PATENTS

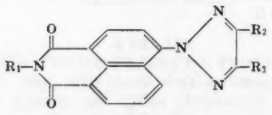
3,362,958 1/1968 Schellhammer 260/281

3,666,758 5/1972 Dorlars ..... 260/308 A

FOREIGN PATENTS OR APPLICATIONS

1,154,995 6/1969 Great Britain 260/281

1. Triazolyl-naphthalimide of the formula



wherein R_1 is hydrogen, unsubstituted alkyl with 1-12 carbon atoms, β-acetoxyethyl, β-hydroxyethyl, β-propionoxyethyl, 3-dimethyl aminopropyl, cyanomethyl, β-butoxyethyl, 3-trimethylammonium propyl, cyclohexyl, methylcyclohexyl or benzyl;

R_2 and R_3 denote independently of one another hydrogen, unsubstituted alkyl with 1–12 carbon atoms, cyclohexyl phenyl or phenyl mono or disubstituted with fluoro, chloro, methoxy or methyl.

B 435,343

3H-OXAZOLO-[4,5-b]-PYRIDINE-2-ONE ESTERS OF 3-(O)-OR(-S-)-O-LOWER ALKYL AMINOPHOSPHATES AND THIOPHOSPHATES

Haukur Kristinsson, Bottmingen, and Kurt Rufenacht, Basle, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 21, 1974, Ser. No. 435,343

Claims priority, application Switzerland, June 26, 1970, 9702/70

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8C **2 Claims**

Group Art Unit 121

References Cited

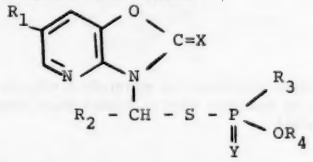
UNITED STATES PATENTS

2,984,669 5/1961 Brahler et al. ..... 260/307 C

FOREIGN PATENTS OR APPLICATIONS

713,278 8/1954 Great Britain ..... 260/307 C

1. A compound of the formula



wherein

R_1 is hydrogen, chlorine, bromine or nitro,

R_2 is hydrogen, methyl, chloromethyl or bromomethyl,

R_3 is amino or dialkylamino having a total of from 2 to 4 carbon atoms,

R_4 is alkyl of from 1 to 4 carbon atoms, alkenyl of from 2 to 4 carbon atoms, alkoxyalkyl having a total of from 2 to 4 carbon atoms, or halogenalkyl of from 1 to 4 carbon atoms, and

each of X and Y represents oxygen or sulphur.

B 425,572

6-FLUORO-3,5-DIHALO-2-PYRIDINOLS

Penelope B. Domenico, 3040 Covington St., Fairfax, Va. 22030

Filed Dec. 17, 1973, Ser. No. 425,572

Int. Cl. C07d *31/30*

U.S. Cl. 260—297 R **2 Claims**

Group Art Unit 121

References Cited

UNITED STATES PATENTS

3,244,586 4/1966 Rigterink ..... 260/294.8 K
3,249,419 5/1966 Martin ..... 260/295 R
3,686,191 4/1972 Nishimura et al. ..... 260/294.8 K

OTHER PUBLICATIONS

Chem. Abts., Vol. 68, No. 5, Item No. 21, 842v, Jan. 29, 1968.

1. 6-Fluoro-3,5-dibromo-2-pyridinol.

2. 6-Fluoro-3,5-dichloro-2-pyridinol.

B 271,104

CERTAIN 2-OXO-4-THIAZOLINE-5-CARBOXYLIC ACID ESTERS

Klaus Grohe, Koeln, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 12, 1972, Ser. No. 271,104

Claims priority, application Germany, July 28, 1971, 2137649

Int. Cl. C07d *91/24*

U.S. Cl. 260—306.7 R **4 Claims**

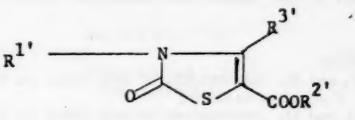
Group Art Unit 122

References Cited

OTHER PUBLICATIONS

Cameron et al., J. Chem. Soc., 1934, pp. 1330–1332.
Elderfield (ed.), Heterocyclic Compounds, Vol. 5, N.Y., John Wiley & Sons, 1957, pp. 496–501, 548–549, 624–625.
Sunkel et al., J. Med. Chem., 1970, 334–335.

1. Thiazolinone-(2)-carboxylic acid esters of the formula:



wherein

$R^{1'}$ is selected from the group of C_1 to C_{12}-alkyl, phenyl, and phenyl substituted one or more times by fluorine, chlorine or bromine atoms or by C_1 to C_3-alkyl groups;

R^2 is selected from the group of C_1 to C_{12}-alkyl or $[C_1+C_{12}]$ C_1 to C_{12}-alkyl substituted by phenyl which is itself optionally substituted one or more times by fluorine, chlorine or bromine atoms or by C_1 to C_3-alkyl; and

R^3 is the same as R^2 or is selected from the group of hydrogen, methoxy carbonyl, ethoxy carbonyl and phenyl which is itself optionally substituted one or more times by fluorine, chlorine or bromine atoms or by C_1 to C_3-alkyl.

B 315,363

OXAZELIDINE OF ENDO-BICYCLO-[3.1.0]HEX-2-ENE-6-CARBOXALDEHYDE

Robert C. Kelly, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 181,246, Sept. 16, 1971, Pat. No. 3,711,515, which is a continuation-in-part of Ser. No. 93,483, Nov. 27, 1970, abandoned. This application Dec. 15, 1972, Ser. No. 315,363

Int. Cl. C07d *85/26*

U.S. Cl. 260—307 F **1 Claim**

Group Art Unit 122

References Cited

UNITED STATES PATENTS

3,711,515 1/1973 Kelly 260/343.3

1. 2-(Endo-bicyclo [3.1.0]hex-2-en-6-yl)-3,4-dimethyl-5-phenyl oxazolidine, being characterized by a melting point of 100°–103° C.

B 189,773

TRIAZOLE-COUMARINS

Gunther Boehmke, and Hans Theidel, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 15, 1971, Ser. No. 189,773

Claims priority, application Germany, Oct. 15, 1970, 2050726

Int. Cl. C07d *55/02, 55/06*

U.S. Cl. 260—308 R **5 Claims**

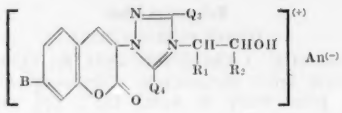
Group Art Unit 121

References Cited

UNITED STATES PATENTS

3,663,560 5/1972 Schellhammen ..... 260/308 R

1. Coumarine compound of the formula:

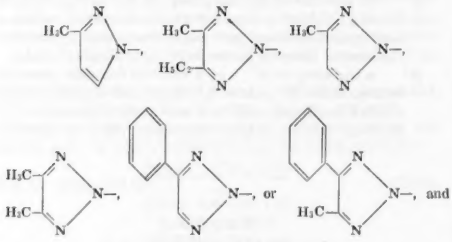


wherein

R_1 and R_2, independently of each other, are hydrogen, C_1–C_4-alkyl, or phenyl;

Q_3 and Q_4, independently of each other, are hydrogen, chloro, C_1–C_4-alkyl, phenyl, cyano, carboxyl, or carbonamido;

B is C_1–C_4-alkoxy,



An $^-$ is chloride, bromide, iodide, hydroxide, carbonate, bicarbonate, alkylsulphate, sulphate, disulphate, perchlorate, phosphate, benzenesulphonate, naphthalenesulphonate, 4-chlorobenzenesulphonate, oxalate, acetate, maleinate, propionate, methanesulphonate, chloroacetate, lactate, tartrate, glycerate, citrate, benzoate, formate of the anion of zinc chloride double salts.

B 387,761

4-(α-PHENYL-O-TOTYL)-3,5-DISUBSTITUTED-4H-1,2,4-TRIAZOLES

Martin Gall, 2255 Benjamin, Kalamazoo, Mich. 49008

Continuation-in-part of Ser. No. 172,920, Aug. 18, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 387,761

Int. Cl. C07d *55/06, 57/00, 99/02*

U.S. Cl. 260—308 R **5 Claims**

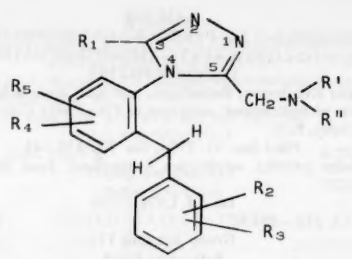
Group Art Unit 122

References Cited

OTHER PUBLICATIONS

Gall, Chemical Abstracts, Vol. 78, Abstract No. 136, 302t (1973), QD1A51.

1. A 4-[α-phenyl-o-tolyl]-5-aminomethyl-3-substituted-4H-1,2,4-triazole of the formula II:



wherein R_1 is hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, cycloalkyl of 3 to 8 carbon atoms, inclusive, phenyl, benzyl, or pyridyl, wherein R′ and R″ are alkyl defined as above, or together

are pyrrolidino, piperidono, or morpholino; wherein R_2, R_3, R_4, and R_5 are hydrogen, alkyl as defined above, halogen, or trifluoromethyl.

B 383,852

TRI-SUBSTITUTED IMIDAZOLES

John J. Baldwin, Lansdale, and Frederick C. Novello, Berwyn, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 250,505, May 5, 1972, Pat. No. 3,812,136. This application July 30, 1973, Ser. No. 383,852

Int. Cl. C07d *49/36*

U.S. Cl. 260—309 **5 Claims**

Group Art Unit 121

References Cited

UNITED STATES PATENTS

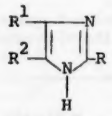
3,244,715	4/1966	Castle	260/250 AC
3,691,178	9/1972	Baldwin	260/294.9
3,812,136	5/1974	Baldwin et al.	260/294.9

OTHER PUBLICATIONS

Hinkel et al., J. Chem. Soc. 1937, pages 1432 to 1437.

Malm et al., J. Heterocyclic Chemistry, Vol. 1, pages 182 to 185, (1964).

1. A compound of the formula:



wherein R is naphthyl, or an aryl radical of the formula:

wherein X is halo, lower alkoxy or lower alkanamido and R^1 and R^2 are the same or different and represent carboxy, lower alkoxycarbonyl, and the non-toxic, pharmacologically acceptable acid addition salts thereof.

B 329,787

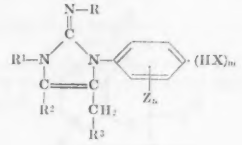
2-IMINO DERIVATIVES OF SUBSTITUTED IMIDAZOLES

Gary L. Eilrich, Creve Coeur, and William D. Dixon, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 5, 1973, Ser. No. 329,787
Int. Cl. C07d 49/34
U.S. Cl. 260—309.6 10 Claims
Group Art Unit 121

References Cited
UNITED STATES PATENTS
3,804,833 4/1974 Stahle et al. 260/253

1. A compound of the formula



wherein:
R is lower alkyl or lower alkoxy lower alkyl;
R^1 is lower alkyl;
R^2 is lower alkyl or hydrogen;
R^3 is lower alkyl or hydrogen;
Z is fluoro, chloro, bromo, lower alkyl, halo lower alkyl or lower alkoxy;
n is an integer 0 through 2;
m is an integer 0 or 1; and
X is an anionic moiety of a strong acid.

B 354,979

CERTAIN TRIFLUOROBUTENYL COMPOUNDS AND THEIR UTILITY AS NEMATOCIDES

Mervin E. Brokke, Moraga, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. Nos. 208,032, Dec. 8, 1971, Pat. No. 3,780,050, and Ser. No. 877,538, Nov. 20, 1969, Pat. No. 3,697,536, which is a division of Ser. No. 490,664, Sept. 27, 1965, Pat. No. 3,513,172. This application Apr. 27, 1973, Ser. No. 354,979
Int. Cl. C07d 27/52
U.S. Cl. 260—326 NS 1 Claim
Group Art Unit 122

References Cited
UNITED STATES PATENTS
2,613,221 10/1972 Ladd ..... 260/326 NS

1. N-(3, 4, 4,- tri fluoro -3- butenyl) phthalimide.

B 306,829

OXOTREMORINE ANTAGONIST

Johan Richard Dahlbom, Sodertalje; Bo Lennart Karlen, Skarholmen, and Sune Gunnar Lindgren, Linkoping, all of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Continuation-in-part of Ser. No. 203,907, Dec. 1, 1971, abandoned, which is a continuation-in-part of Ser. No. 774,530, Nov. 8, 1968, abandoned. This application Nov. 15, 1972, Ser. No. 306,829
Claims priority, application Great Britain, Nov. 9, 1967, 51146
Int. Cl. C07d 27/08
U.S. Cl. 260—326.25 1 Claim
Group Art Unit 122

References Cited
UNITED STATES PATENTS
3,444,185 5/1969 Nau ..... 260/326.25 X

1. The compound N-(5- -pyrrolidino-3-pentynyl)-pyrrolidin-2-one or its therapeutically acceptable salts.

B 318,122

ELECTRICALLY CONDUCTING ORGANIC SALTS

Morrel H. Cohen, Chicago, Ill.; Malcolm G. Miles, Ladue, and James D. Wilson, University City, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 26, 1972, Ser. No. 318,122
Int. Cl. C07d 71/00
U.S. Cl. 260—327 M 5 Claims
Group Art Unit 121

References Cited
UNITED STATES PATENTS
3,781,281 12/1973 Hartzler ..... 260/240 F

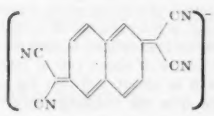
1. A compound of the formula $A^+ B^-$

where A is

or

and B is

or



B 402,065
PROCESS FOR THE PRODUCTION OF CYCLIC THIOCARBONATES

Paolo Koch, Via Cavour, 5, San Giuliano Milanese, and Emilio Perrotti, Via Kennedy, 2, San Donato Milanese, both of Italy

Filed Oct. 1, 1973, Ser. No. 402,065
Int. Cl. C07d 89/06
U.S. Cl. 260—327 M 5 Claims
Group Art Unit 121

References Cited

UNITED STATES PATENTS

3,357,991 12/1967 Swakon 260/327

1. Process for the production of cyclic thiocarbonates having the formula

wherein A is a divalent alkyl radical having from 2 to 5 carbon atoms, separating the oxygen and sulfur atoms by two carbon atoms, characterized in that a thioglycol or a hydroxydisulphide having the general formula HO—A—SX, wherein X is a hydrogen atom or a radical —S—A—OH, wherein A is as defined above, is reacted with carbon mon-oxide and oxygen in the presence of a catalyst selected from Ni $(CO)_4$, $Co_2(CO)_8$,Fe $(CO)_5$, Mn $(CO)_6$ and Se (CO).

B 380,446
CHROMAN AND CHROMENE COMPOUNDS

Paul E. Bender, Willingboro, N.J., and Bernard Loev, Broomall, Pa., assignors to Smith Kline Corporation, Philadelphia, Pa.

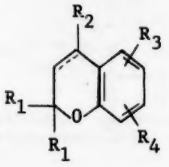
Filed July 18, 1973, Ser. No. 380,446
Int. Cl. C07d 7/26
U.S. Cl. 260—345.2 5 Claims
Group Art Unit 121

References Cited

UNITED STATES PATENTS

3,636,058 1/1972 Fahrenholtz ..... 260/345.2 X

1. A compound of the formula:



in which
- is a single or a double bond;
- R_1 is lower alkyl;
- R_2 is cycloalkyl or cycloalkenyl, said cycloalkyl and cycloalkenyl having 5–6 carbon atoms;
- R_3 is hydroxy or an alkali metal salt thereof, lower alkoxy or lower alkanoyloxy and
- R_4 is a straight or branched alkyl or alkoxy group having 5 to 12 carbon atoms.

B 336,243
PREPARATION OF 3,4,5,6,7,8-HEXAHYDROCOUMARIN

Sijbrandus E. Schaafsma, Wilhelminastraat 14, Beek(L), and Johannes J. M. Deumens, Vrijheidslaan 11, Limbricht, both of Netherlands

Filed Feb. 27, 1973, Ser. No. 336,243
Int. Cl. C07d 7/26
U.S. Cl. 260—343.2 R 9 Claims
Group Art Unit 121

References Cited

UNITED STATES PATENTS

2,204,008 6/1940 Britton et al. 260/343.2
3,442,910 5/1969 Thweatt 260/343.2

OTHER PUBLICATIONS

Jour. Chem. Soc., sec (C), 1967, (part 1), pp. 101–108.

Russian Chem. Pat. (1968), 37(3), p. 198.

J. Amer. Chem. Soc. Vol. 80, p. 3406, (1958).

1. A process for the preparation of 3,4,5,6,7,8-hexahydrocoumarin by the lactonization of 2-(β-carboxyethyl)-cyclohexanone, said process comprising lactonizing the carboxyethylcyclohexanone by heating the carboxyethylcyclohexanone, in the presence of a catalytic amount of a strong acid having an atmospheric boiling point greater than 200°C, to a temperature of about 140 to about 245°C, at a pressure of about 6 to about 200 mm Hg and recovering hexahydrocoumarin from the resulting vapor.

B 233,383
PROCESS FOR PREPARING 4-CHLOROFORMYL PHTHALIC ACID ANHYDRIDE

Paul Riegger, Augustiner Str. 1, 521 Troisdorf-Sieglar, and Hermann Richtzenhain, 5066 Schwellenbach/Post Marialinden, both of Germany

Filed Mar. 8, 1972, Ser. No. 233,383
Int. Cl. C07c 63/82
U.S. Cl. 260—346.3 10 Claims
Group Art Unit 121

References Cited

UNITED STATES PATENTS

1,557,154 10/1925 George 260/544
1,963,748 6/1934 Kyrides 260/544
3,691,217 9/1972 McCann 260/544

1. A method for preparing a 4-chloroformyl phthalic acid anhydride which comprises contacting a trimellitic acid anhydride with an aromatic trichloromethyl compound of the formula:

$$R(-CCl_3)_a,$$

wherein R represents a mono- or polynuclear aromatic radical and *a* is a number from 1 to 6 in the presence of ferric chloride, at 80° to 200°C.

B 378,621
N-(FURANYLMETHYL) FLUOROALKANESULFONAMIDES

Joseph Kenneth Harrington, Edina, and Robert D. Trepka, Woodbury, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 150,789, June 7, 1971, Pat. No. 3,766,193, Continuation-in-part of Ser. No. 795,050, Jan. 29, 1969, Pat. No. 3,629,332. This application July 12, 1973, Ser. No. 378,621

Int. Cl. C07d *5/16*

U.S. Cl. 260—347.2 **3 Claims**

Group Art Unit 121

References Cited

UNITED STATES PATENTS

3,147,064	9/1964	Brown et al.	260/294.8 F

1. A compound of the formula

$$R_fSO_2NH\text{-}R\text{-}Ar$$

wherein R_f is a fluoroalkyl group of one or two carbon atoms, R is methylene and Ar is furanyl, and horticulturally acceptable salts thereof.

B 360,986
2-THIO-(CIS-1,2-EPOXYPROPYL)PHOSPHONIC ACID DERIVATIVES

Erwin F. Schoenewaldt, 88 Crestwood Dr., Watchung, N.J. 07060

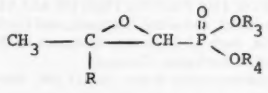
Continuation of Ser. No. 87,595, Nov. 6, 1970, abandoned, which is a division of Ser. No. 729,411, May 15, 1968, abandoned. This application May 16, 1973, Ser. No. 360,986

Int. Cl. C07f *9/38, 9/40*

U.S. Cl. 260—348 R **4 Claims**

Group Art Unit 121

1. A compound of the formula



wherein R is —SH, R_3 and R_4 are the same or different hydrogen, benzyl, loweralkenyl and loweralkynyl, an alkali metal cation, an alkaline earth metal cation, an ammonium ion, or a benzyl ammonium or lower alkyl ammonium ion.

B 410,062
2-SULFONYLOXYETHYL 3-TRIFLUOROMETHYLPHENOXY-4'-CHLOROPHENYL ACETATE

Richard F. Shuman, 930 Summit Ave., Westfield, N.J. 07090

Division of Ser. No. 271,446, July 13, 1972, abandoned. This application Oct. 26, 1973, Ser. No. 410,062

Int. Cl. C07c *143/68*

U.S. Cl. 260—456 R **3 Claims**

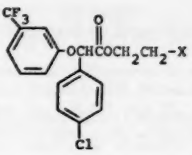
Group Art Unit 126

References Cited

UNITED STATES PATENTS

3,378,582	4/1968	Bolhofer	260/520
3,517,050	6/1970	Bolhofer	260/473 R
3,517,051	6/1970	Bolhofer	260/473 R

1. A compound of the formula:



wherein X is lower alkylsulfonyloxy or lower alkyl substituted phenylsulfonyloxy.

B 328,210
BORATE ESTERS PREPARED BY SUCCESSIVE REACTIONS OF BORIC ACID WITH GLYCOL

Arthur W. Sawyer, Hamden, and David A. Csejka, Orange, both of Conn., assignors to Olin Mathieson Chemical Corporation

Division of Ser. No. 87,306, Nov. 5, 1970, Pat. No. 3,729,497, which is a division of Ser. No. 653,337, July 14, 1967, Pat. No. 3,637,794. This application Jan. 31, 1973, Ser. No. 328,210

Int. Cl. C07f *5/04*

U.S. Cl. 260—462 R **2 Claims**

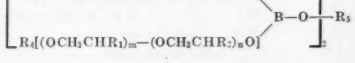
Group Art Unit 126

References Cited

UNITED STATES PATENTS

3,080,412	3/1963	Young	260/462 R
3,129,239	4/1964	Lang	260/462 R
3,303,130	2/1967	Scypinski et al.	260/462 R X
3,527,765	9/1970	Reece et al.	260/462 R X

1. A borate ester of the formula:



where R_1 and R_2 are independently selected from the group consisting of hydrogen and methyl; R_3 and R_4 are each an independently selected alkyl group having from 1 to 20 carbon atoms; R_5 is the organic residue exclusive of reactive hydroxyl groups of a thioglycol selected from the group consisting of thiodiethylene glycol and thiodipropylene glycol and *n* and *m* are positive integers whose sum is from 2 to 20.

B 350,708
CYCLOPROPYLMETHYL ESTERS

Clive A. Henrick, and Gerardus B. Staal, both of Palo Alto, Calif., assignors to Zoicon Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 263,902, June 19, 1972, abandoned, which is a continuation-in-part of Ser. No. 255,368, May 22, 1972, abandoned. This application Apr. 13, 1973, Ser. No. 350,708

Int. Cl. C07c *69/34, 69/52*

U.S. Cl. 260—485 L **9 Claims**

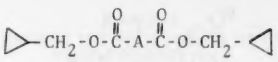
Group Art Unit 127

References Cited

OTHER PUBLICATIONS

Kaiser et al., J. Org. Chem., 1970, 35(4), pp. 1198–9 (1970).

1. A compound of the formula



wherein A is alkylene of 1 to 20 carbon atoms, alkenylene of 2 to 20 carbon atoms, or alkynylene of 2 to 20 carbon atoms.

B 356,887

SYNTHESIS OF ACRYLIC ACIDS AND ESTERS

Ronald A. Schneider, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 3, 1973, Ser. No. 356,887

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 D **10 Claims**

Group Art Unit 127

References Cited

UNITED STATES PATENTS

2,734,074 2/1956 Redmon ..... 260/486 D

1. A process for producing acrylic acids and esters which comprises reacting in the vapor phase formaldehyde and a lower alkanoic acid or lower alkyl ester thereof in the presence of a titanium or vanadium orthophosphate catalyst at a temperature of about 300°C to 500°C.

B 254,211

PRODUCTION OF CARBOXYLIC ACID ESTERS BY HYDROESTERIFICATION

Donald E. Morris, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed May 17, 1972, Ser. No. 254,211

Int. Cl. C07c *67/00, 51/14*

U.S. Cl. 260—497 A **6 Claims**

Group Art Unit 124

References Cited

UNITED STATES PATENTS

2,995,575	8/1961	Schulz et al.	260/343.5
3,040,090	6/1962	Alderson et al.	260/483
3,102,899	9/1963	Cannell	260/439
3,168,553	2/1965	Slaugh	260/497
3,641,074	2/1972	Fenton	260/410.9
3,641,076	2/1972	Booth	260/429 R
3,646,079	2/1972	Lawrenson	260/429 J
3,660,493	5/1972	Johnson et al.	260/604 HF
3,668,249	6/1972	Fenton	260/546
3,733,362	5/1973	Biale	260/604 HF

OTHER PUBLICATIONS

du Pont et al., Bull. Soc. Chim., France (1948), 529–532.

1. In a process for the production of carboxylic acid esters, wherein an ethylenically unsaturated hydrocarbon having from 2 to 30 carbon atoms is reacted with carbon monoxide and a primary or secondary alcohol at a temperature of 50°C to 300°C and at partial pressures of carbon monoxide from 100 psia to 1,500 psia, the improvement which comprises contacting the said reactants in the presence of a solution, essentially comprising (1) a member of the class consisting of acetylacetonatodicarbonylrhodium(I), μ,μ,-diacetatotetracarbonyldirhodium(I), propionatocarbonylbis(-tripropylphosphine)rhodium(I), acetatocarbonylbistriphenylphosphinerhodium(I), tetraacetatodirhodium(II), or N,N-dimethyldithiocarbamatodicarbonylrhodium(I) and (2) a tertiary organophosphorus component having from 3 to 90 carbon atoms, the said solution being substantially free of halogen.

B 270,089

PROCESS FOR PRODUCING ALKADIENOL ESTERS

David Rose, Dusseldorf-Holthausen, and Herbert Lepper, Cologne-Mulheim, both of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Filed July 10, 1972, Ser. No. 270,089

Claims priority, application Germany, July 26, 1971, 213729

Int. Cl. C07c *67/04*

U.S. Cl. 260—497 A **15 Claims**

Group Art Unit 127

References Cited

UNITED STATES PATENTS

3,407,224	10/1968	Smutney	260/497 A X
3,534,008	10/1970	Bryant	260/497 A
3,562,314	2/1971	Shryne	260/497 A X
3,567,762	3/1971	Shier	260/497 A X
3,711,534	1/1973	Manyike et al.	260/497 A

FOREIGN PATENTS OR APPLICATIONS

1,178,812 1/1970 Great Britain ..... 260/497 A

3. A process for producing alkadienol esters comprising the steps of reacting a 1,3-conjugated acyclic diolefin of 4 to 10 carbon atoms with a carboxylic acid selected from the group consisting of alkanoic acids of 2 to 12 carbon atoms, benzene dicarboxylic acids, cycloalkyl carboxylic acids of 5 to 8 carbon atoms, benzoic acid, alkanedioic acids of 2 to 12 carbon atoms by mixed oligomerization, in the presence of from 0.1 to 6 parts by weight, based on the weight of said diolefin, of a catalyst combination consisting essentially of (1) a member selected from the group consisting of (a) palladium, (b) palladium (II) compounds and (c) the mixtures thereof and (2) a triphenylphosphite containing at least 3 ortho substituents selected from the group consisting of alkyl having 1 to 4 carbon atoms and phenyl; and recovering said alkadienol esters.

B 330,536

PROCESS FOR THE PRODUCTION OF ALLYL ACETATE

Wolfgang Swodenk, Odenthal-Globusch, and Gerhard Scharfe, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No 15,700, Mar. 2, 1970, abandoned.

This application Feb. 7, 1973, Ser. No. 330,536

Claims priority, application Germany, Mar. 5, 1969, 1911178

Int. Cl. C07c *67/04*

U.S. Cl. 260—497 A **12 Claims**

Group Art Unit 127

References Cited

UNITED STATES PATENTS

3,275,680	9/1966	Holzrichter	260/497 A
3,517,054	6/1970	Ketley	260/497 A

FOREIGN PATENTS OR APPLICATIONS

771,193 11/1967 Canada 260/497

1. Process for the production of allyl acetate wherein propylene, oxygen and acetic acid are reacted in the gaseous phase and in the presence of a catalyst consisting essentially of palladium and alkali metal acetate and, optionally, a Group V to VIII metal, gold, or copper, or compounds thereof, which process comprises supplying the reactants at hourly rates of 1 to 3 moles of acetic acid per liter of catalyst, 1 to 5 moles of oxygen per mole of acetic acid, and 4 to 40 moles of propylene and inert components per mole of oxygen, and supplying water in the feed stream and controlling the ratio of said water to said acetic acid, within the range of 1 to 100 moles of water per mole of acetic acid to result in a conversion of more than 90 percent of the acetic acid introduced per pass.

B 254,708

DISTRYLBENZENE DERIVATIVES

Hans Rudolf Meyer, Felsplattenstrasse 26,, Basel, Switzerland

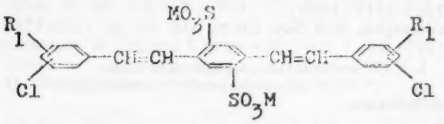
Filed May 18, 1972, Ser. No. 254,708
Claims priority, application Switzerland, June 7, 1971, 8327/71
Int. Cl. C07c *143/24*
U.S. Cl. 260—505 C 4 Claims
Group Art Unit 126

References Cited

UNITED STATES PATENTS

2,527,427	10/1950	Keller et al.	260/505
2,547,910	4/1951	Hausermann et al.	260/505
2,681,926	6/1954	Lane et al.	260/505

1. New distyrylbenzene derivatives of the formula



wherein R_1 represents hydrogen or chlorine and, if R_1 represents chlorine, the chlorine atoms assume the positions 2, 4 or 3, 4, and M denotes a hydrogen atom, an alkali metal ion or an ammonium ion.

B 316,422

PROCESS FOR PREPARING PYROMELLITIC ACID

Anatoli Onopchenko, Monroeville, and Johann G. D. Schulz, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 18, 1972, Ser. No. 316,422
Int. Cl. C07c *63/32*
U.S. Cl. 260—524 N 9 Claims
Group Art Unit 127

References Cited

FOREIGN PATENTS OR APPLICATIONS

907,926	10/1962	Great Britain	260/524 XR

1. In a process wherein durene is subjected to oxidation with nitric acid at a temperature of at least about 155° for about 0.1 to about 10 hours to convert said durene to pyromellitic acid, the improvement which comprises subjecting said durene to pretreatment with a gas containing molecular oxygen in a lower carboxylic acid having from two to four carbon atoms having dissolved therein a cobalt compound corresponding to about 0.1 to about 10 per cent by weight of cobalt, based on said lower carboxylic acid, the weight ratio of said lower carboxylic acid to durene being from about 1:10 to about 10:1, at a temperature of about 80° to about 140° C. for about 10 minutes to about 20 hours sufficient to convert substantially all of the durene to the corresponding diacids thereof.

B 178,475

PROCESS FOR THE PREPARATION OF TEREPHTHALIC ACID

Ewald Katzschmann, Witten-Bommern, Germany, assignor to Chemische Werke Witten GmbH, Witten-Ruhr, Germany

Continuation of Ser. No. 568,405, July 28, 1966, abandoned. This application Sept. 7, 1971, Ser. No. 178,475
Claims priority, application Germany, July 28, 1965, 1259326
Int. Cl. C07c *63/26*, *51/42*
U.S. Cl. 260—525 16 Claims
Group Art Unit 127

References Cited

UNITED STATES PATENTS

2,572,710	10/1951	Emerson	260/525
2,894,978	7/1959	Katzschmann	260/525
3,171,856	3/1965	Kurtz	260/525
3,364,256	1/1968	Ichikawa et al.	260/525

1. An after-treatment process for oxidation products, that are obtained by the air oxidation of a mixture of p-toluic acid methyl ester in excess and p-xylene and that contain p-toluic acid methyl ester, p-toluic acid, terephthalic acid monomethyl ester and terephthalic acid, to isolate pure terphthalic acid which comprises heating said oxidation products to an elevated temperature and under pressure and adding a substance selected from the group consisting of water, a mixture of p-xylene and water, and a mixture of acetic acid and water and separating the pure terephthalic acid from the reaction mixture.

B 393,347

PROCESS FOR THE MANUFACTURE OF ACRYLIC ACID

Heinz Erpenbach, Surth; Klaus Gehrmann, Hurth-Knapsack; Winfried Lork, Erftsdadt Friesheim, and Peter Prinz, Hurth-Burbach, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt/Main, Germany

Filed Aug. 31, 1973, Ser. No. 393,347
Claims priority, application Germany, Sept. 5, 1972, 2243584
Int. Cl. C07c *57/04*, *51/26*
U.S. Cl. 260—530 N 5 Claims
Group Art Unit 127

References Cited

UNITED STATES PATENTS

3,322,693	5/1967	Bethell et al.	260/530 N X
3,365,489	1/1968	Bethell et al.	260/530 N
3,415,760	12/1968	Hadeley et al.	260/530 N
3,578,707	5/1971	Bethell et al.	260/530 N

1. In a process for making acrylic acid by reacting acrolein with molecular oxygen in the presence of steam and, if desired, one or more inert gases, at elevated temperatures and in contact with a fixed bed cobalt molybdate catalyst, which has been prepared by precipitating cobalt molybdate from the combined aqueous solutions of a cobalt salt, of a molybdenum compound and of ammonia at a temperature of about 60°C and at a pH of at most 7; filtering off, washing and drying the resulting precipitate at a temperature of at least 100°C; heating the dry cobalt molybdate for several hours at elevated temperatures, grinding and transforming it into shapes and sintering the cobalt molybdate shapes for several hours, the improvement which comprises producing the acrylic acid in contact with a catalyst prepared by a process consisting essentially of combining an aqueous solution of the cobalt salt with that of the molybdenum compound in the atomic ratio of Co:Mo of about 1.05:1; establishing in the combined solutions a pH between 3.8 and 6.0; drying the precipitate at 110°–170°C; heating the dry cobalt molybdate to tempera-

tures between 250° and 550°C; and sintering the cobalt molybdate shapes at temperatures between 500° and 700°C with the resultant formation of a cobalt molybdate catalyst having an inner surface area between 4 and 8 square meters/g and a volume of pores between 0.1 and 0.2 milliliters/g.

B 295,860

CATALYSTS AND CATALYTIC PROCESSES

David Jack Westlake, 40, Firstwood Ave., Ewell, Epsom, Surrey, and Michael John Wriglesworth, 35, Church St., Warnham, Horsham, Sussex, both of England

Filed Oct. 10, 1972, Ser. No. 295,860

Claims priority, application Great Britain, Oct. 20, 1971, 48777/71; Dec. 20, 1971, 58991/71

Int. Cl. C07c *51/12, 51/10, 67/00*

U.S. Cl. 260—532 **14 Claims**

Group Art Unit 127

References Cited

UNITED STATES PATENTS

3,641,076	2/1972	Booth	260/533 AN
3,700,706	10/1972	Butter	260/533 AN
3,733,362	5/1973	Biale	260/533 AN
3,769,324	11/1973	Paulik et al.	260/532
3,769,329	11/1973	Paulik et al.	260/532
3,772,380	11/1973	Paulik et al.	260/532

1. A process for the carbonylation of an alcohol or an alcohol derivative chosen from the group consisting of esters, symmetrical ethers and alkyl halogens containing from 1 to 20 carbon atotms per molecule in the alcohol moiety to produce a carboxylic acid having one more carbon atom per molecule than that in the alcohol moiety of the alcohol or alcohol derivative comprising reacting said alcohol or said alcohol derivative with carbon monoxide at a temperature between 50°and 300°C in the presence of a cationic complex catalyst selected from the group consisting of cationic complex of univalent rhodium, univalent iridium, trivalent rhodium and trivalent iridium, containing a stabilizing ligand selected from the group consisting of acetonitrile, benzonitrile, n-butyl isocyanate, benzene, toluene, hexamethyl benzene, an aryl phosphite or an aryl phosphine, and wherein the anionic moiety in the cationic complex catalyst is a radical selected from the group consisting of phosphates, sulphatess, perchlorates, borates, iodates, and bromates, and optionally, a promoter selected from the group consisting of bromine, iodine, a hydrogen halide, an alkyl halide, an aryl halide, and a metal halide.

B 368,128

PROCESS OF PREPARATION OF DICHLORIDE OF METHYLTHIOPHOSPHONIC ACID

Daniel A. Froment; 3, rue Berthollet, Henri Laurent, 28 rue Pasteur, both of Vert Le Petit, and Victor A. Vilain, 6 rue des Fillettes, La Ferte Alais, all of France

Filed June 8, 1973, Ser. No. 368,128

Claims priority, application France, Aug. 3, 1972, 72.28012

Int. Cl. C07f *9/42*

U.S. Cl. 260—543 P **8 Claims**

Group Art Unit 127

References Cited

UNITED STATES PATENTS

3,803,226	4/1974	Ching et al.	260/543 P

1. A process of preparation of dichloride of methylthiophosphonic acid, comprising heating chloride of dimethylthiophosphinic acid at temperatures between 300°C and 600°C at atmospheric or superatmospheric pressure, and separating the dichloride from the reaction products.

B 211,786

PHENYL KETOXIME DERIVATIVES

Ernest Haddock, 187 Queenborough Rd., Sheerness, Sheppey, and William J. Hopwood, 48 Brier Rd., Borden, Sittingbourne, England

Filed Dec. 23, 1971, Ser. No. 211,786

Int. Cl. C07c *127/16*

U.S. Cl. 260—553 A **2 Claims**

Group Art Unit 126

References Cited

UNITED STATES PATENTS

2,709,648	5/1955	Ryker et al.	260/553 A X
2,768,971	10/1956	Jones	260/553 A
2,801,911	8/1957	Gilbert et al.	260/553 A X
3,778,473	12/1973	Kornis et al.	260/553 A

OTHER PUBLICATIONS

Doub et al., J. Am. Chem. Soc. Vol. 80, pp. 2205–2217 (1958).

Gheorghiu, Bull. Soc. Chim., Vol. 49, pp. 1205–1210 (1931).

1. 3′-(N′-methylureido) acetophenone oxime.

2. 3′-(N′,N′-dimethylureido) acetophenone O-methyloxime.

B 285,796

PREPARATION OF N,N-DIALKYLACYLAMIDES

Francis A. Daniher, Darien, and Kenneth E. Visek, Stickney, both of Ill., assignors to CPC International Inc.

Filed Sept. 1, 1972, Ser. No. 285,796

Int. Cl. C07c *103/30*

U.S. Cl. 260—561 N **22 Claims**

Group Art Unit 124

References Cited

UNITED STATES PATENTS

2,128,208	8/1938	Jacobson	260/49.1
2,393,000	1/1946	Seeger	260/464
2,534,585	12/1950	Erickson	260/561 N
2,562,583	7/1951	Schulz et al.	260/465.2
2,587,209	2/1952	Phillips et al.	260/561
3,288,794	11/1966	Kuceski	260/268

OTHER PUBLICATIONS

Chem. Abstracts—22; 943[x]

Gordon et al., J.A.C.S., April, 1949, 71, pp. 1245–50.

McC. Arnett et al., J.A.C.S., Dec. 1950, 72, pp. 5635–8

Mc C. Arnett et al., J.A.C.S., Nov., 1951, 73, pp. 5393–5

Ratchford et al., J.A.C.S., Aug., 1947, 69, pp. 1911–14

1. A process for the production of an N,N-dialkylacrylamide, comprising:

a. amidating a beta-lower alkoxy substituted propionic acid ester with an amine having one labile hydrogen atom and substituted with two lower alkyl radicals having up to 6 carbon atoms, said amidation reaction being conducted by contacting said ester with said amine at temperatures ranging from about 75°C to about 100°C in the presence of a catalyst-solvent comprising a polyol having at least two vicinal hydroxy groups to form an alcohol and a beta-lower alkoxy substituted N,N-dialkypropionamide,

b. catalytically cracking the beta-lower alkoxy substituted N,N-dialkylpropionamide by contacting the amide in the vapor phase at temperatures ranging from about 300°C to about 500°C with a particulate, acidic cracking catalyst, said catalyst being characterized as containing at least about 50%, by weight SiO_2 and a small but effective amount of Al_2O_3, to thereby form a mixture of an alcohol and the N,N-dialkylacrylamide, and recovering the latter.

B 321,938

ALCOHOL-SOLUBLE ETHYL AURAMINE SALTS

Karl Schmeidl, 25 Carostrasse, 6710 Frankenthal; Manfred Eisert, 26 Berner Weg., 6700 Ludwigshafen, and Guenther Riefel, 15 Gerbodoweg, 6900 Heidelberg, all of Germany

Filed Jan. 8, 1973, Ser. No. 321,938
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 R 1 Claim
Group Art Unit 126

References Cited

UNITED STATES PATENTS

3,132,178	5/1964	Weyker et al.	260/566 R
3,314,994	4/1967	Schubert et al.	260/566 R

FOREIGN PATENTS OR APPLICATIONS

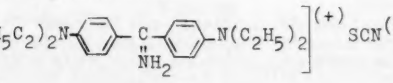
815,966	7/1959	Great Britain	260/566 R
1,185,948	3/1970	Great Britain	260/566 R

OTHER PUBLICATIONS

Lynch et al., J.A.C.S., Vol. 55, pp. 2515–2520, (1933).

Dictionary of Organic Compounds, Vol. 1, pp. 292, (1965).

1. The dye of the formula:



B 224,323

10-(2-DIALKYLAMINOETHYL)-10,11-DIHYDRO, OR 10-(2-DIALKYLAMINOETHYL)-5-METHYLENE-2,7-SUBSTITUTED OR UNSUBSTITUTED-5H-DIBENZO[A,D]CYCLOHEPTENES

William J. Houlihan, 15 Raynold Rd., 07046 Mountain Lakes, and Jeffrey Nadelson, 194 Elmwood Rd., 07054 Parisppany, both of N.J.

No Drawing. Filed , Ser. No. 224,323
Int. Cl. C07c *87/28*
U.S. Cl. 260—570.8 TC 3 Claims
Group Art Unit 124

References Cited

UNITED STATES PATENTS

3,409,640	11/1968	Villani	260/570.8
3,649,692	3/1972	Humber	260/570.9

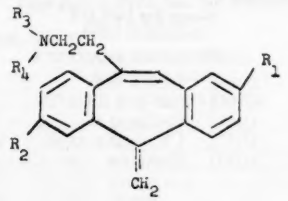
OTHER PUBLICATIONS

Russel, "Chemical Abstracts," Vol. 71, page 323, No. 101611w (1969).

"Chemical Reviews," Vol. 64, No. 3, pages 243–244 and 246–247 (1964).

Cope et al., "Journal American Chemical Society," Vol. 73, pages 1674–1675 and 1677 (1951).

1. A compound having the formula



wherein

R_1 and R_2 are independently hydrogen, lower alkyl having 1 to 3 carbon atoms, lower alkoxy having 1 to 3 carbons atoms, halo having an atomic weight of 19 to 36 or trifluoromethyl,

R_3 and R_4 are independently lower alkyl having 1 to 3 carbon atoms.

2. A pharmaceutically acceptable acid addition salt of a compound of claim 1.

B 438,053

SUBSTITUTED-O -HYDROXY-OMEGA-(METHYLSULFINYL)-ACETOPHENONES AND PROCESS FOR PRODUCING SAME

Maximilian von Strandtmann, Rockaway T.W.P.; John Shavel, Jr., Mendham; Sylvester Klutchko, Hackettstown, and Marvin Cohen, New Milford, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

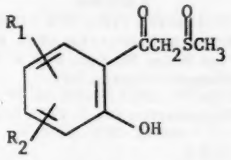
Continuation-in-part of Ser. No. 174,947, Aug. 25, 1971, Pat. No. 3,801,644. This application Jan. 30, 1974, Ser. No. 438,053
Int. Cl. C07c *49/80*
U.S. Cl. 260—592 8 Claims
Group Art Unit 126

References Cited

UNITED STATES PATENTS

3,801,644	4/1974	von Strandtmann et al.	260/592

1. A compound of the formula:



wherein R_1 is hydrogen or halogen and R_2 is halogen.

B 442,919

α-(P-BENZYLOXYPHENYL)-P-CRESOL

Mario Gustav Buzzolini, Morristown, and Robert Everett Manning, Mountain Lakes, both of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 258,787, June 1, 1972,. This application Feb. 15, 1974, Ser. No. 442,919
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 R 1 Claim
Group Art Unit 126

References Cited

OTHER PUBLICATIONS

Bataafsche Pet. M., Derwent Belgian Patents Reports, Vol. 66A, July 15, 1960, C17.

1. The phenolic compound which is α-(p-benzyloxyphenyl)-p-cresol.

B 414,129

PROCESS FOR MAKING POLYTETRAMETHYLENE ETHER GLYCOL HAVING A NARROW MOLECULAR WEIGHT DISTRIBUTION

Melvin C. Baker, Youngstown, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 8, 1973, Ser. No. 414,129
Int. Cl. C07c *41/02*, *43/00*
U.S. Cl. 260—615 B 4 Claims
Group Art Unit 126

References Cited

UNITED STATES PATENTS

2,751,419	6/1956	Hill et al.	260/615 B
3,358,042	12/1967	Dunlop et al.	260/6.5 B
3,359,332	12/1967	Johnston	260/615 B
3,461,169	8/1969	Davis et al.	260/615 B X
3,467,679	9/1969	Rogers	260/346.1 R
3,478,109	11/1969	McConnell	260/6.5 B X

1. A process for producing polytetramehylene ether glycol having a narrow molecular weight distribution of about

1.30–1.70, a number average molecular weight of about 1600–3200 and a viscosity of about 4.0–20 poise at 40°C., said process comprising the steps of (1) partially depolymerizing at a temperature from about 120°–150°C. polytetramethylene ether glycol starting material having a number average molecular weight of about 600–2200 in the presence of a cross-linked ion exchange resin in acid form to produce tetrahydrofuran and removing the tetrahydrofuran by vaporization as formed said depolymerization being conducted to an extent sufficient to obtain said narrow molecular weight distribution polytetramethylene ether glycol and said resin being present at about 3–7 percent based upon the weight of starting polytetramethylene ether glycol, (2) cooling to about 70°–90°C., (3) filtering the polytetramethylene ether glycol to remove the resin therefrom, and (4) removing any remaining tetrahydrofuran at a low pressure of about 1–100 mm. of mercury.

B 403,996

SELF-EXTINGUISHING POLYMER COMPOSITIONS CONTAINING BROMINATED ARYL BUTANES

Hilda Howell, and Walter M. Kutz, both of Pittsburgh, Pa., assignors to Koppers Company, Inc.

Division of Ser. No. 296,116, Oct. 10, 1972, Pat. No. 3,826,766. This application Oct. 5, 1973, Ser. No. 403,996

Int. Cl. C07c *25/18*

U.S. Cl. 260—649 R **1 Claim**

Group Art Unit 126

References Cited

OTHER PUBLICATIONS

Adams et al., Organic Synthesis, 40 (1960), p. 86.

1. p-Phenylene-1,1′-bis(1,2,3,4-tetrabromo-4-phenylbutane).

B 334,985

METHYLENE CHLORIDE STABILIZED WITH KETONES

Norman L. Beckers, Chardon, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Feb. 23, 1973, Ser. No. 334,985

Int. Cl. C07c *17/90, 17/40*

U.S. Cl. 260—652.5 R **2 Claims**

Group Art Unit 126

References Cited

UNITED STATES PATENTS

2,981,759	4/1961	Cole et al.	260/652.5 R
3,285,857	11/1966	Rathbone et al.	260/652.5 R
3,326,988	6/1967	Stack	260/652.5 R
3,326,989	6/1967	Cormany et al.	260/652.5 R
3,406,213	10/1968	Patron	260/652.5 R
3,423,476	1/1969	Patron	260/652.5 R
3,535,392	10/1970	Cormany et al.	260/652.5 R
3,546,304	12/1970	Patron	260/652.5 R

1. A stabilized methylene chloride composition consisting essentially of methylene chloride and stabilizing amounts of from about 0.05 to about 2.0 percent by weight of the methylene chloride of a compound selected from the group consisting of methyl ethyl ketone and acetone.

B 023,046

PRODUCTION OF CHLOROFLUOROCARBONS

David Ernest Hyatt, Westminster, Colo., assignor to Stauffer Chemical Company, New York, N.Y.

Filed Mar. 26, 1970, Ser. No. 23,046

Int. Cl. C07c *17/00*

U.S. Cl. 260—653.7 **6 Claims**

Group Art Unit 126

References Cited

UNITED STATES PATENTS

2,005,707	6/1935	Daudt et al.	260/653.7
2,005,711	12/1935	Daudt et al.	260/653.7
2,658,928	11/1953	Simons et al.	260/653.8
2,744,147	5/1956	Milks	260/653.7
2,744,148	5/1956	Ruh et al.	260/653.7
3,294,852	12/1966	Vecchio et al.	260/653.7
3,442,962	5/1969	Vecchio et al.	260/653.7

FOREIGN PATENTS OR APPLICATIONS

546,962	10/1957	Canada	260/653.7

1. The fluorination of chlorocarbons in accordance with the reaction

$$CH_{4-x}Cl_x + y\ HF \quad CH_{4-x}Cl_{x-y}F_y + y\ HCl$$

wherein x is from 1 to 4; y is less than or equal to x; and x and y are integers in the presence of a catalyst, said catalyst being prepared by impregnating a Bi(III) salt of a strong inorganic acid selected from the group consisting of nitric, hydrochloric, hydrofluoric, sulfuric and phosphoric acids on a suitable support material, said catalyst containing from about 1 to about 10 percent by weight metal based on the total weight of the catalyst salt and support material, said fluorination being carried out as a temperature between about 200° and about 500°C.

B 316,917

RUTHENIUM COMPLEXES AS CATALYSTS FOR REDUCTION OF POLYENES

Darryl R. Fahey, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 140,564, May 5, 1971, abandoned. This application Dec. 20, 1972, Ser. No. 316,917

Int. Cl. C07c *13/00*

U.S. Cl. 260—666 A **4 Claims**

Group Art Unit 116

References Cited

UNITED STATES PATENTS

3,113,986	12/1963	Breslow et al.	260/683.9
3,387,932	6/1968	Pino et al.	23/203
3,488,400	1/1970	Caudlin et al.	260/677 H
3,597,461	8/1971	L'Eplattenier et al.	260/429
3,607,050	9/1971	Chakardes	23/203 C

1. A process for the partial hydrogenation of 1,5,9-cyclododecatriene to cyclododecene which comprises contacting 1,5,9-cyclododecatriene with a ruthenium-ligand complex catalyst consisting essentially of $(Ph_3P)_2(CO)_3Ru$ or $[Ru(CO)_4]_3$ under hydrogenation conditions which partially reduce 1,5,9-cyclododecatriene to cyclododecene.

B 391,675
POLYCYCLIC COMPOUNDS

Lawrence H. Shepherd, Jr., 9715 Everglade St., Baton Rouge, La. 70814

Continuation-in-part of Ser. No. 288,115, Sept. 11, 1972, abandoned, and a continuation-in-part of Ser. No. 291,647, Sept. 25, 1972, Pat. No. 3,810,949. This application Aug. 27, 1973, Ser. No. 391,675

Int. Cl. C07c 13/54
U.S. Cl. 260—666 PY 4 Claims
Group Art Unit 116

References Cited

UNITED STATES PATENTS

3,476,788	11/1969	Bruno	260/666 PY
3,662,010	5/1972	Legeudre	260/666 PY

OTHER PUBLICATIONS

Cosca, S. et al., Chem. Abst. 73: 76744y 1970.

1. Tricyclo[5.2.1.0^{2,6}]dec-3-ene having an allylic group in the 8 or 9 position.

B 366,790
PROCESS FOR PREPARING CUMENE

Earl F. Harper, Oakmont, and Roger C. Williamson, Allison Park, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed June 4, 1973, Ser. No. 366,790
Int. Cl. C07c 3/52
U.S. Cl. 260—671 P 8 Claims
Group Art Unit 116

References Cited

UNITED STATES PATENTS

2,416,990	3/1947	Gorin et al.	260/671 P
2,564,488	8/1951	Mahan	260/671 P
2,848,514	8/1958	deKeizer et al.	260/671 P
2,870,229	1/1959	deKeizer et al.	260/671 P
2,881,227	4/1959	deKeizer	260/671 P
2,897,246	7/1959	deKeizer et al.	260/671 P
3,385,906	5/1968	Kaufman	260/671 P

1. A process for preparing cumene which comprises reacting benzene and propylene in the liquid phase in the presence of an amorphous aluminum silicate at a temperature of about 480° to about 600° F. (about 249° to about 316° C.).

B 366,861
PROCESS FOR PREPARING CUMENE

Earl F. Harper, Oakmont, and Riger C. Williamson, Allison Pk., both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed June 4, 1973, Ser. No. 366,861
Int. Cl. C07c 3/52
U.S. Cl. 260—671 P 7 Claims
Group Art Unit 116

References Cited

UNITED STATES PATENTS

2,904,607	9/1959	Mattox et al.	260/671 C
3,251,897	5/1966	Wise	260/671 R
3,385,906	5/1968	Kaufman	260/671 P
3,641,177	2/1972	Eberly et al.	260/671 C
3,716,596	2/1973	Bowes	260/671 C
3,751,506	8/1973	Barress	260/671 C

1. A process for preparing cumene which comprises reacting benzene and propylene in the liquid phase in the presence of a crystalline aluminum silicate at a temperature of about 460° to about 540° F. (about 238° to about 282° C.).

B 345,060
SEPARATION OF PARAXYLENE

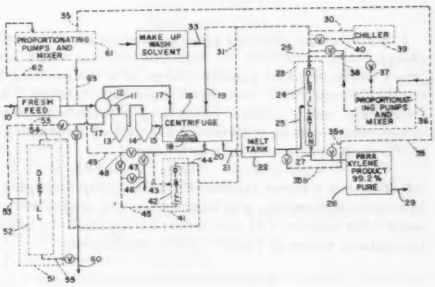
Robert R. Edison, Olympia Fields, and Thorpe Dresser, Markham, both of Ill., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Mar. 26, 1973, Ser. No. 345,060
Int. Cl. C07c 7/14
U.S. Cl. 260—674 A 8 Claims
Group Art Unit 116

References Cited

UNITED STATES PATENTS

2,823,241	2/1958	Bennett et al.	260/674
3,219,722	11/1965	Jakob	260/674
3,410,923	11/1968	Strand et al.	260/674
3,462,511	8/1969	Edison	260/674
3,662,013	5/1972	Machell et al.	260/674



1. In the method in which a liquid feedstock comprising paraxylene is cooled to crystallize paraxylene and to form a slurry of liquid and paraxylene crystals and such slurry is processed to separate a paraxylene crude filter cake, and in which such crude filter cake is thereafter processed to obtain paraxylene of commercial purity, the improvement which comprises:

controlling the feedstock composition to contain at least 21 percent paraxylene, and most of the balance being C_8 aromatic hydrocarbons;

maintaining the filter cake at a temperature within the range from −75° to −50°C. throughout the purification process; subjecting the filter cake to flooding washing with hydrocarbon solvent having a freezing point within a range from −130° to −60°C. and a boiling point within the range from 90° to 115°C., said solvent constituting from 20 percent to 95 percent of the initial weight of the filter cake, said solvent having an initial temperature within the range from −70° to 40°C., the filtrate being withdrawn from the thus purified filter cake, said flooding washing being accomplished quickly with wash solvent-cake contact time of less than 2 minutes; and

recovering paraxylene having a purity of at least 99.2 percent by melting and distilling such purified cake from single stage crystallization of paraxylene.

B 350,245

DISPROPORTIONATION OF ALIPHATIC COMPOUNDS

Stanley J. Lucki, Runnemede; Nai Yuen Chen, R. D. Titusville, both of N.J., and Emerson Bowes, Erie, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 101,193, Dec. 23, 1970, abandoned, which is a continuation of Ser. No. 722,207, April 18, 1968, abandoned. This application Apr. 11, 1973, Ser. No. 350,245

Int. Cl. C07c *3/62*

U.S. Cl. 260—676 R **9 Claims**

Group Art Unit 116

References Cited

UNITED STATES PATENTS

3,140,253	7/1964	Plank et al.	260/683.65
3,190,939	6/1965	Benesi	260/683.65
3,201,356	8/1965	Kress et al.	260/683.65
3,236,762	2/1966	Rabo et al.	260/683.65
3,280,212	10/1966	Miale et al.	260/683.65
3,299,153	1/1967	Adams et al.	260/683.65
3,301,917	1/1967	Wise	260/683.65
3,370,099	2/1968	Plank et al.	260/683.65
3,507,931	4/1970	Morris et al.	260/683.65
3,578,723	5/1971	Bowes et al.	260/672

1. A method for effecting catalytic conversion of a paraffin charge under conditions of disproportionation which comprises contacting said paraffin charge at a temperature between 350 and 900°F. and under a pressure between 0 and 3,000 psig. with a catalyst comprising a catalytically-active zeolite which can be represented in terms of mole ratios of oxides in the anhydrous state as follows:

$$0.9 \pm 0.2\ M_{2/n}O : Al_2O_3 : 3\text{–}20\ SiO_2$$

wherein M is a cation selected from the group consisting of hydrogen, ammonium, alkylammonium and arylammonium and *n* is the valence of M, said zeolite having the X-ray diffraction pattern values of Table 1 of the specification.

B 409,026

SUBSTITUTED 1,3,7-OCTATRIENES AND THEIR PREPARATION

Alden Dwayne Josey, and Jack Robert Kirchner, both of Wilmington, Del.

Continuation-in-part of Ser. No. 79,644, Oct. 9, 1970, abandoned. This application Oct. 24, 1973, Ser. No. 409,026

Int. Cl. C07c *11/24*

U.S. Cl. 260—677 R **18 Claims**

Group Art Unit 116

References Cited

UNITED STATES PATENTS

3,267,169	8/1966	Smutny	260/682
3,444,258	5/1969	Kohnle et al.	260/677
3,449,463	6/1969	Kenton et al.	260/677
3,457,319	7/1964	Olechowski et al.	260/677
3,501,540	3/1970	Zuech	260/666
3,522,321	7/1970	DeYoung	260/666

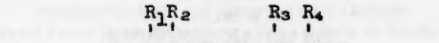
OTHER PUBLICATIONS

Takahashi et al., "The Dimerization of Butadiene," Chem. Society of Japan, Vol. 41, pp. (454–460), 1968.

Chem. Abstracts–Vol. 67, 1967, p. 53559d.

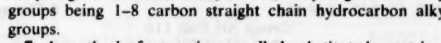
Goldblott et al., "The Production of α– and β– Pyronene From Allo–Ocumeno," Journal of American Chem. Soc., Vol. 66, pp. (655 and 656).

1. An alkyl substituted 1,3,7-octatriene of the formula

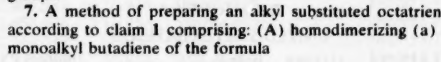


in which both R_1 and R_4 are alkyl groups, on either is an alkyl group and the other is hydrogen; and each of R_2 and R_3 is an alkyl group or hydrogen, provided that when either R_1 or R_4 is an alkyl group and the other is hydrogen and either R_2 or R_3 is hydrogen, the other of R_2 and R_3 is hydrogen, said alkyl groups being 1–8 carbon straight chain hydrocarbon alkyl groups.

7. A method of preparing an alkyl substituted octatriene according to claim 1 comprising: (A) homodimerizing (a) a monoalkyl butadiene of the formula



or (b) a dialkyl butadiene of the formula



in which formulas R_1 and R_2 are 1–8 carbon straight chain hydrocarbon alkyl groups; or, (B) codimerizing (a) 1,3-butadiene and one such monoalkyl butadiene or one such dialkyl butadiene, or (b) two different such monoalkyl butadienes or two different such dialkyl butadienes, or (c) one such monoalkyl butadiene and one such dialkyl butadiene, under liquid phase conditions in the presence of a catalyst which is a dienophile-coordinated palladium-phosphine complex.

B 426,674

RECOVERY OF ETHANE AND HF AND EQUIPMENT COSTS REDUCTION IN ALKYLATION OF HYDROCARBONS

Charles C. Chapman, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 12, 1973, Ser. No. 426,674

Int. Cl. C07c *3/54*

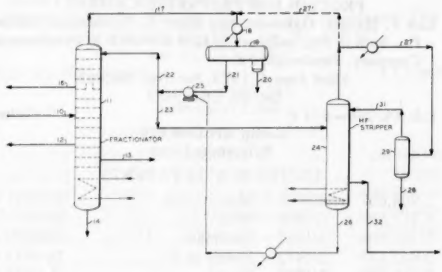
U.S. Cl. 260—683.41 **3 Claims**

Group Art Unit 116

References Cited

UNITED STATES PATENTS

2,426,841	9/1947	Peavy et al.	260/683.41
2,434,040	1/1948	Hartman	260/683.41
2,455,003	11/1948	Frey	260/683.41
3,254,137	5/1966	Hutto et al.	260/683.48
3,775,510	11/1973	Hutson, Jr. et al.	260/683.41



1. In the alkylation of an iosparaffin with an olefin wherein the alkylation effluent hydrocarbon phase is fractionated to remove alkylate, normal butane, isobutane, ethane and lighter, and HF acid therefrom, wherein the overhead hydrocarbon fraction containing propane, ethane, lighter hydrocarbons and HF acid is condensed and allowed to separate into phases

in the fractionator overhead accumulator and said HF acid is removed while the condensed hydrocarbon phase is in part returned as reflux to said fractionator and in part is passed to an HF stripper, the improvement which comprises removing ethane and propane as a side draw stream from said HF stripper, thus obtaining a bottoms of liquid propane from the HF stripper, substantially free from HF, suitable for use wherever a hydrocarbon stream free from HF is needed.

DAM RDK

B 383,581

ALKYLATION PROCESS WITH RECOVERY AND REGENERATION OF FLUOROSULFURIC ACID CATALYST

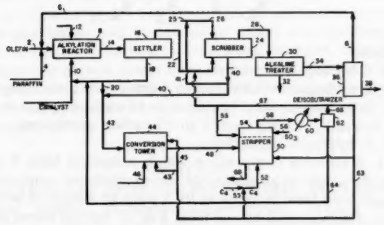
Paul T. Parker, Baton Rouge, La., and Ivan Mayer, Summit, N.J., assignors to Esso Research and Engineering Company

Continuation of Ser. No. 236,737, March 21, 1974, Pat. No. 3,766,293. This application July 30, 1973, Ser. No. 383,581
Int. Cl. C07c *3/54*
U.S. Cl. 260—683.58 **14 Claims**
Group Art Unit 116

References Cited

UNITED STATES PATENTS

3,766,293	10/1973	Parker et al.	260/683.58



1. An improved alkylation process comprising:

a. contacting an olefin and a paraffin hydrocarbon in an alkylation reactor with an alkylation catalyst comprising fluorosulfuric acid at alkylation conditions to thereby form a mixture of fluorosulfuric acid phase and a hydrocarbon phase containing alkylation reaction product;

b. settling said mixture into said hydrocarbon phase and said fluorosulfuric acid phase;

c. washing said hydrocarbon phase with an acid comprising sulfuric acid thereby removing at least a portion of the fluorosulfuric acid present in said hydrocarbon phase;

d. separating a sulfuric acid phase containing said fluorosulfuric acid from said hydrocarbon phase containing said alkylation reaction product;

e. contacting said sulfuric acid phase separated in step (d) with water to form an acid-water mixture thereby converting at least a portion of the fluorosulfuric acid contained in said acid phase to hydrogen fluoride and sulfuric acid;

f. stripping hydrogen fluoride from said acid-water mixture of step (e) with a paraffin hydrocarbon thereby forming a hydrocarbon phase containing hydrogen fluoride;

g. treating the hydrocarbon phase from step (f) with sulfur trioxide to regenerate fluorosulfuric acid; and

h. withdrawing said regenerated fluorosulfuric acid from said alkylation process.

B 364,910

VINYL URETHANE RESINS FROM HALOGENATED DIOLS AND PHOSPHONATE TETROLS

Erich Kuehn, Wilmington, Del., assignor to ICI America Inc., Wilmington, Del.

No Drawing. Filed May 29, 1973, Ser. No. 364,910
Int. Cl. C08g *41/04*
U.S. Cl. 260—859 **18 Claims**
Group Art Unit 142

References Cited

UNITED STATES PATENTS

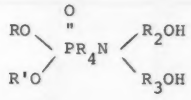
3,297,745	1/1967	Fekete	260/77.5 AP
3,371,056	2/1968	Delius	260/22
3,509,234	4/1970	Burlant	260/859
3,641,199	2/1972	Niederhauser	260/859
3,642,943	2/1972	Noel	260/859
3,677,920	7/1972	Kai	260/859
3,678,012	7/1972	Matsuda	260/859

FOREIGN PATENTS OR APPLICATIONS

2,120,399	11/1971	Germany	

1. A composition comprising

a. a vinyl urethane resin comprising the reaction product of a mixture of a halogen-containing diol and a phosphonate having the formula:



wherein R and R′ are selected from the group consisting of allyl, lower alkyl, and lower haloalkyl radicals; and R_2, R_3, and R_4 are lower alkylene or lower haloalkyl radicals, provided that either R_2 or R_3 must be an alkylene radical, wherein the amount of phosphonate in said mixture is such that the molar ratio of diol to phosphonate is equal to from about 0.4/0.6 to about 0.9/0.1; an isocyanate having a functionality equal to from about 2.0 to about 3.0; and a hydroxyl terminated ester of acrylic or methacrylic acid; provided that, (i) when the amount of the mixture of diol and phosphonate is equal to up to 1 mole the amount of the isocyanate is equal to about 2 moles per mole of the mixture and the amount of the hydroxyl terminated ester is equal to about 2 moles per mole of the mixture, and (ii) when the amount of the mixture of diol and phosphonate is equal to greater than 1 mole, the amount of isocyanate is equal to about 1 mole plus 1 mole per mole of the mixture and the amount of the hydroxyl terminated ester is equal to about 2 moles; and

b. a monomer selected from the group consisting of styrene,

t-butyl styrene, alpha methyl styrene, chlorostyrene, divinyl benzene, acrylic acid, dimethyl maleate, dibutyl fumarate, butyl methacrylate, nonyl methacrylate, and allyl alcohol.

B 420,514

COMPOSITION COMPRISING A DIALLYLIC PHTHALATE POLYMER AND A POLYPHENYLENE ETHER

Carl Leonard Wright, Pasadena, and Harry Hoyt Beacham, Severna Park, both of Md., assignors to FMC Corporation, New York, N.Y.

Division of Ser. No. 257,439, May 26, 1972, Pat. No. 3,826,786, which is a continuation-in-part of Ser. No. 101,004, Dec. 23, 1970, abandoned. This application Nov. 30, 1973, Ser. No. 420,514

Int. Cl. C08f *29/12, 3/58, 29/50*

U.S. Cl. 260—874 **2 Claims**

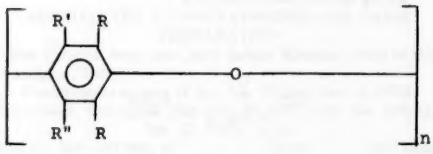
Group Art Unit 142

References Cited

UNITED STATES PATENTS

3,385,836	5/1968	Modnick	260/78.4
3,445,312	5/1969	Rider	156/332
3,579,484	5/1971	Thomas	260/78.4

1. A thermosetting resin composition comprising (a) 5 to 95 percent by weight of a diallylic phthalate prepolymer selected from the group consisting of diallyl orthophthalate prepolymers and diallyl isophthalate prepolymers, at least 5 of the 5 to 95 percent being a liquid monomer; (b) 5 to 95 percent by weight of a polyphenylene ether having a repeating structural unit of the formula



wherein the oxygen atom of one unit is connected to the benzene nucleus of the adjoining unit, *n* is a positive integer and is at least **10**, *R* is a monovalent substituent selected from the group consisting of hydrogen, hydrocarbon radicals free of tertiary α-carbon atom, halohydrocarbon radicals having at least two carbon atoms between the halogen atoms and the phenol nucleus and being free of a tertiary α-carbon atom, hydrocarbonoxy radicals being free of a tertiary α-carbon atom, and halohydrocarbonoxy carbon atoms having at least two carbon atoms between the halogen atom and phenol nucleus and being free of a tertiary α-carbon atom, R′ and R″ are both monovalent substituents which are the same as R and in addition, halogen, (c) a free radical catalyst in sufficient amount to convert the polymerizable material-polyphenylene ether mixture to the thermoset state at elevated temperatures, and (d) 0.1 to 1.5 percent anthracene, by weight based on the weight of the polymerizable materials as polymerization controller.

B 256,936

MOULDING COMPOSITIONS

Herbert Schuster, Koeln-Stammheim, Germany; Edmund Huther, Janeiro, Brazil; Karl-Heinz Ott, Leverkusen, and Karl Dinges, Odenthal, both of Germany, assignors to Bayer Aktiengesellschaft

Filed May 25, 1972, Ser. No. 256,936

Claims priority, application Germany, May 26, 1971, 2126151

Int. Cl. C08f *15/38, 19/18*

U.S. Cl. 260—883 **13 Claims**

Group Art Unit 142

References Cited

UNITED STATES PATENTS

3,468,976	9/1969	Yanai et al.	260/881

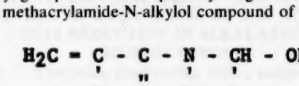
FOREIGN PATENTS OR APPLICATIONS

1,062,286	3/1967	Great Britain	260/881

1. A process for the production of high impact and ageing-resistant molding composition, which process comprises polymerizing (A) total of 95 parts by weight of a monomer mixture consisting of

i. styrene, nuclear or side chain alkyl styrene or a mixture thereof and

ii. acrylonitrile, methacrylonitrile or a mixture thereof in a weight ratio of (i) : (ii) of 100:0 to 60:40 in an aqueous dispersion at a temperature of from 60° to 70°C. in the presence of 5 to 90 parts by weight of (B) an elastomer, which elastomer is an emulsion polymer prepared at a temperature of below 70°C. and comprising in polymerized form from 94 to 99.5 parts by weight of an alkyl ester of acrylic acid having from 4 to 10 carbon atoms in the alkyl group and 6 to 0.5 parts by weight of an acrylamide or methacrylamide-N-alkylol compound of the formula



wherein

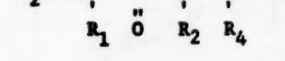
R_1 is hydrogen or methyl;

R_2 is hydrogen or alkyl having from 1 to 8 carbon atoms;

R_3 is hydrogen, alkyl having 1 to 10 carbon atoms or carboxyalkyl having from 1 to 10 carbon atoms and

R_4 is hydrogen or methyl.

11. A molding composition which comprises from 5 to 50 parts by weight of an elastomer, which elastomer comprises in polymerized form from 94 to 99.5 parts by weight of an alkyl ester of acrylic acid having from 4 to 10 carbon atoms in the alkyl group and from 6 to 0.5 parts by weight of an acrylamide or methacrylamide-N-alkylol compound of the formula:



wherein

R_1 is hydrogen or methyl;

R_2 is hydrogen or alkyl having from 1 to 8 carbon atoms;

R_3 is hydrogen, alkyl having 1 to 10 carbon atoms or carboxyalkyl having from 1 to 10 carbon atoms and

R_4 is hydrogen or methyl

and 95 to 50 parts by weight of a polymerized mixture consisting of

i. styrene, nuclear or side chain alkyl styrene or a mixture thereof and

ii. acrylonitrile, methacrylonitrile or a mixture thereof in a weight ratio of (i) : (ii) of 100:0 to 60:40,

at least 20% of said polymerized mixture having been graft polymerized in the presence of the elastomer in an aqueous dispersion.

B 292,140
BLOCK COPOLYMERIZATION WITH AZOAMIDINO COMPOUNDS AS INITIATOR

Henri G. G. Dekking, Rootstown, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

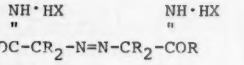
Division of Ser. No. 42,894, June 2, 1970,. This application Sept. 25, 1972, Ser. No. 292,140
Int. Cl. C08f *19/02*
U.S. Cl. 260—884 **9 Claims**
Group Art Unit 143

References Cited

UNITED STATES PATENTS

3,058,943	10/1962	Gray et al.	260/899
3,135,717	6/1964	Gregorian et al.	260/884
3,342,920	9/1967	Fukushima et al.	260/899
3,442,780	5/1969	Levine	260/884
3,511,896	5/1970	Harmer	260/884

1. The method which comprises block copolymerizing at least two different polymerizable ethylenically unsaturated monomers to produce a block copolymer capable of forming a film, said block copolymerization being in contact with an initiator in an amount sufficient to effect polymerization and ranging from 0.0001 to 0.1 part by weight of initiator per part of total monomers, said initiator consisting essentially of the reaction product at 0°C. to 25°C. of an azodiimidoether hydrogen halide of the general fromula



with an organic polyamino compound of the general formula $R''(NR'_2)_2$ wherein each R is an alkyl or cycloalkyl group of one to six carbon atoms, each R′ is a hydrogen atom or an aliphatic monovalent hydrocarbon group free of aliphatic unsaturation and labile hydrogen atoms, at least one R′ in said organic polyamino compound being a hydrogen atom, each R″ is a divalent group free of aliphatic unsaturation and labile hydrogen atoms and composed of atoms selected from the class consisting of carbon, hydrogen and nitrogen, there being at least two carbon atoms in each R″ group, and each X is a halogen atom, said reaction being with from one to two moles of organic polyamino compound per mole of azodiimidoether hydrogen halide.

B 311,413
2-METHYLENE PROPANE PHOSPHONIC ACID ESTERS

Eugen Velker, Dormagen-Hackenbroich; Francis Bentz, Cologne, and Gunther Nischk, Dormagen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

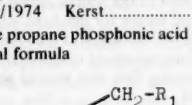
Filed Dec. 1, 1972, Ser. No. 311,413
Claims priority, application Germany, Dec. 3, 1971, 2160019; Dec. 3, 1971, 2160021
Int. Cl. C07f *9/40*
U.S. Cl. 260—932 **4 Claims**
Group Art Unit 127

References Cited

UNITED STATES PATENTS

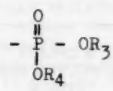
2,827,475	3/1958	Coover	260/969 X
2,843,617	7/1958	Kaufman	260/969 X
3,062,792	11/1962	McConnell et al.	260/932 X
3,808,237	4/1974	Kerst	260/932 X

1. 2-methylene propane phosphonic acid esters corresponding to the general formula



in which R_1 represents halogen or the radical

and R_2 the radical



where R_3 and R_4 are C_1–C 4-alkyl.

B 343,506
LIQUID REDISTRIBUTOR FOR A FRACTIONATING COLUMN

James D. Hajek, 5802 Valkeith, Houston, Tex. 77520; Eugene J. Krizak, 2114 Wyoming St., Baytown, Tex. 77520, and Earl E. McReynolds, 627 Baywood Ave., La Porte, Tex. 77571

Filed Mar. 21, 1973, Ser. No. 343,506
Int. Cl. B01f *3/04*
U.S. Cl. 261—97 **10 Claims**
Group Art Unit 177

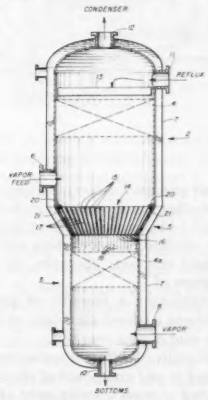
References Cited

UNITED STATES PATENTS

912,167	2/1909	Potter	55/223
1,032,657	7/1912	Briggs	261/98 X
2,051,545	8/1936	Collins	202/158 X
2,810,562	10/1957	Eld et al.	202/158 X
3,006,623	10/1961	Ross et al.	261/97 X
3,099,697	7/1963	Lerman et al.	261/97
3,298,673	1/1967	Muto et al.	202/158 X
3,464,893	9/1969	Gorodetsky	202/158
3,695,011	10/1972	Leech et al.	55/386
3,699,748	10/1972	Barkovitz	261/96 X

FOREIGN PATENTS OR APPLICATIONS

1,005,586	9/1965	Great Britain	261/96



1. In a fractionating column with two interconnecting sections of different diameter having a liquid redistributor disposed therein at the interconnection of said sections, a reflux inlet positioned to feed refluxing liquid to said liquid redistributor, and a packing disposed in the section of said column below said redistributor, the improvement wherein said liquid redistributor comprises a plurality of concentric frustoconical members of substantially equal height, the common axis of said members being substantially coaxial with the vertical axis of said column and the bases of said members being coplanar

and oriented towards the section of said column having the larger diameter wherein said bases open into said section, and the base of the outermost of said frustoconical members having a diameter greater than the internal diameter of said column section having the smaller diameter and positioned in such a way as to preclude any liquid falling freely between the outer peripheral edge of the outermost of said frustoconical members and the inner surface of the column section having the smaller diameter.

B 294,673

METHOD FOR PRODUCING ISOTROPIC FOAMED STOCK

Lawrence C. Porter, Palos Verdes Peninsula, and Kenneth E. Graves, Saratoga, both of Calif., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 90,500, Nov. 18, 1970, Pat. No. 3,702,747, which is a division of Ser. No. 701,596, Jan. 30, 1968, Pat. No. 3,606,903. This application Oct. 3, 1972, Ser. No. 294,673
Int. Cl. B29d *27/04*
U.S. Cl. 264—40 **10 Claims**
Group Art Unit 145

References Cited

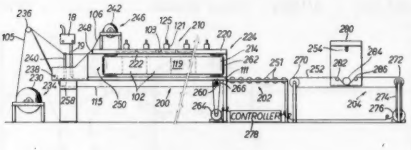
UNITED STATES PATENTS

3,123,856	3/1964	Dye et al.	264/47
3,249,486	3/1966	Voisinet et al.	264/45 X
3,354,503	11/1967	Joseph et al.	264/47 X
3,799,719	3/1974	Bonikowski et al.	264/40 X

OTHER PUBLICATIONS

Foxboro Bulletin, "Polyurethane Foam Blending Digital Controls and Systems," Foxboro, Mass., The Foxboro Company, September, 1967, Bulletin L–23, 2,5M, pp. 1–8.

Savas, Emanuel S., "Computer Control of Industrial Processes," New York, McGraw–Hill, 1965, pp. 119–133.



1. In a one-shot process for commingling a master reactant and a plurality of other liquid reactants including resin, isocyanate, catalyst, and a blowing agent according to a preselected formulation, the method of establishing and maintaining the proportions of said reactants according to said formulation comprising the steps of

electrically establishing a plurality of preset values each corresponding to a preselected ratio of one of said other reactants to said master reactant,

generating a plurality of different measurement signals each corresponding to and composed of electrical pulses functionally related to mass transfer units of said master and said other reactants,

deriving an electrical signal composed of pulses corresponding in number to the actual ratio of each of said other reactants to said master reactant in said process as a function of the number of pulses in said measurement signals, and

incrementally adjusting the input of each of said reactants into said process as a function of any difference between the actual ratio of said reactant to said master reactant and the preset value corresponding thereto.

B 455,775

METHODS OF AND APPARATUS FOR CONTROLLING THE THICKNESS OF AN ANNULAR EXTRUSION

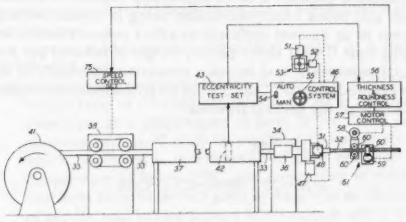
Matthew R. Dembiak, Clifton, and John J. Glosek, Roselle, both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Mar. 28, 1974, Ser. No. 455,775
Int. Cl. B29c *3/06*
U.S. Cl. 264—40 **15 Claims**
Group Art Unit 236

References Cited

UNITED STATES PATENTS

3,290,995	12/1966	Pull	264/40 X
3,504,395	4/1970	MacPherson	425/71
3,599,288	8/1971	Eakman	425/141
3,635,620	1/1972	Brown	425/113
3,728,058	4/1973	Wheeler	425/144



1. A method of extruding an elongated annular article, wherein a first mechanism controls the uniformity of the wall thickness of diametrically opposite quadrants of the article with respect to the wall thickness of the quadrants adjacent thereto, and a second mechanism controls the average value of the wall thickness of the four quadrants of the article, the method comprising:

generating first and second signals indicative, respectively, of

a. an increase of the average value of the wall thickness in diametrically opposite quadrants of the article with respect to the average value of the wall thickness in the other two quadrants beyond a predetermined acceptable range, and

b. a deviation of the average value of the wall thickness from a predetermined thickness range;

applying the first signals to the first mechanism to increase the uniformity of the wall thickness;

applying the second signals to the second mechanism to change the average thickness of the article to a value within the thickness range; and

blocking the second signals from being applied to the second mechanism upon the average wall thickness exceeding the predetermined thickness range while the first signals are being applied to the first mechanism.

9. Apparatus for extruding an elongated annular article, including a means for mechanically controlling the uniformity of the wall thickness of diametrically opposite quadrants of the article with respect to the wall thickness of the quadrants adjacent thereto, and means for mechanically controlling the average value of the wall thickness of the four quadrants of the article, wherein an improvement comprises:

means for generating first and second signals indicative, respectively, of

a. an increase of the average value of the wall thickness in diametrically opposite quadrants of the article with respect to the average value of the wall thickness in the other two quadrants beyond a predetermined acceptable range of values, and

b. a deviation of the average value of the wall thickness from a predetermined thickness range;

means, coupled to the means for mechanically controlling the uniformity of the wall thickness, for translating the first signals into mechanical motion;

means for applying the first signals to the signal translating means to increase the uniformity of the wall thickness;

means for applying the second signals to the means for controlling the average wall thickness to alter the operation thereof and to change the average thickness of the article to a value within the thickness range; and

means rendered effective upon the average wall thickness exceeding the values of the thickness range while the first signals are being applied to the signal translating means for blocking the second signals from being applied to the means for controlling the average wall thickness.

B 223,621

METHOD OF MAKING AN INTEGRAL SKIN FOAMED PRODUCT WHEREIN PORTIONS OF THE SKIN ARE OF GREATER DENSITIES

James Lynn Haas, 2105 Fernwood Dr., Aliquippa, Pa.

Filed Feb. 4, 1972, Ser. No. 223,621

Int. Cl. B29d *27/04*

U.S. Cl. 264—45 **1 Claim**

Group Art Unit 145

References Cited

UNITED STATES PATENTS

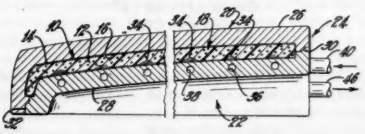
2,272,930	2/1942	Black	264/DIG. 14
3,007,203	11/1961	Ammons	264/DIG. 14
3,099,516	7/1963	Henrickson	264/48
3,129,270	4/1964	Hood	264/54
3,211,605	10/1965	Spaak et al.	264/DIG. 83
3,269,882	8/1966	Willy	264/237 X
3,324,209	6/1967	Holt et al.	264/237 X
3,534,128	10/1970	Makowski	264/237 X
3,558,751	1/1971	Santelli	264/DIG. 14
3,632,266	1/1972	Winstead	264/48 UX

OTHER PUBLICATIONS

du Pont Bulletin: "Rigid Urethane Foams Methods of Application," Wilmington, Del., E. I. du Pont de Nemours & Co., (Inc.), Elastomer Chemicals Dept., June 1957, A-4713-2M-4-62., 8 pp.

Mobay Chemical Co. Bulletin: "The Rolling Showcase For Engineering Plastics," Pittsburgh, Pa., Mobay CHemical Co., Approx. 1968, pp. 1-8.

Weir, Clifford L., "The Action Is Swinging to Structural Foams," In Plastics Technology, April 1972, pp. 37-41.



1. A method of making a product having a foam core and a skin, which skin differs in density at portions thereof, said method comprising preparing an exothermic, foamable, thermosetting resin reaction mixture including a liquid blowing agent which vaporizes at a temperature between about 20° and 400°F., placing an amount of the mixture in a mold cavity, said amount being sufficient to cause the resulting foam to contact the entire walls of the mold, closing the mold, cooling certain areas of the walls of the mold cavity to a temperature sufficiently low as to cause the blowing agent to condense in those areas and redissolve in the mixture, and thereby form the skin for the product at different densities with denser portions of the skin being located at the surface of the product adjacent the cooled areas, and heating areas of the walls of the mold cavity between cooled areas and thereby form thinner skin areas for the product at the surface portions adjacent the heated areas.

B 262,241

METHOD FOR PREPARING A COMPLETELY COVERED FOAM MOLDING

Karl-Heinz Muller, Leverkusen; Harry Rohr, Koenigsdorf/Cologne, and Karl-Heinz Ott, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 13, 1972, Ser. No. 262,241

Claims priority, application Germany, June 15, 1971, 2129523

Int. Cl. B29d *27/04*

U.S. Cl. 264—54 **5 Claims**

Group Art Unit 141

References Cited

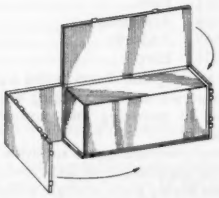
UNITED STATES PATENTS

2,806,812	9/1957	Merz	264/54 X
2,948,651	8/1960	Waag	264/45 X
2,959,508	11/1960	Graham et al.	264/54 X
3,043,627	7/1962	Torjusen	264/45 X
3,091,946	6/1963	Kesling	264/45 X
3,163,686	12/1964	Dusel et al.	264/45
3,381,999	5/1968	Steere	264/45 X
3,706,679	12/1972	Hopton et al.	264/54 X
3,723,586	3/1973	Foster et al.	264/54 X

OTHER PUBLICATIONS

Bikales-Extrusion and Other Plastics Operations, Wiley-Interscience (N.Y.), 1971, pp. 128.

Bikales-Characterization of Polymers, Wiley-Interscience (N.Y.), 1971, pp. 97-98.



1. A process for producing a moulded article which comprises the steps of applying a vinyl chloride polymer containing a plasticizer to the internal surfces of a mould which is preheated to a temperature of from 30° to 150°C., thereafter completely filling the mould with granules of a thermoplastic or elasticthermoplastic polymer containing a blowing agent and heating the mould to a temperature of from 150° to 270°C. until the vinyl chloride polymer containing a plasticizer has formed a homogeneous covering layer and the thermoplastic or elastic-thermoplastic polymer has formed a foamed core having a uniform density of 0.2 to 0.8 g/cm³ or having zones of different uniform densities in the range of from 0.2 to 0.8 g/cm³, said core comprising

1. from 5 to 60 percent by weight of a rubbery elastic butadiene or isoprene polymer containing up to 50 percent by weight of copolymerized styrene, acrylonitrile or a lower alkyl ester of acrylic or methacrylic acid or a polyalkyl acrylate or a cis- or trans-polypentenamer or ethylene-propylene terpolymer containing not more than 10 percent by weight of ter-component and
2. from 95 to 40 percent by weight of polymerised (a) styrene, alkylstyrene, methyl methacrylate or mixtures thereof and (b) styrene, acrylonitrile, alkylacrylonitrile, methyl methacrylate or mixtures thereof in a proportion

by weight of (a):(b) in the range of from 95:5 to 50:50, in which the monomers (2) have been completely or partially polymerised in the presence of polymer (1) and a residue of the monomers (2) has been added in the form of a separately made copolymer, and said covering layer comprising

a. from 30 to 85 percent by weight of a vinyl chloride copolymer containing up to 20 percent by weight of comonomers with a K-value according to Fikentscher of from 55 to 80, which is suitable for the preparation of a plastisol; or a mixture of from 90 to 30 percent by weight, of a vinyl chloride polymer which has a K-value of from 55 to 80 and a particle size of from 0.2 to 50 μ, and from 10 to 70 percent by weight of a vinyl chloride polymer which has a K-value of from 55 to 80 and a particle size of from 50 to 500 μ and

b. from 70 to 15 percent by weight of a saturated or unsaturated monomeric plasticiser or mixtures thereof in which the vinyl chloride polymers are not completely soluble.

B 346,044

PROCESS FOR FORMING THIN WALLED ARTICLES OR THIN SHEETS

Robert D. Smith, 1105 Currituck Dr., Raleigh, N.C. 27609, and William B. Upchurch, Rte. 1, Wake Forest, N.C. 27587

Continuation-in-part of Ser. No. 132,192, April 7, 1971, abandoned, which is a continuation-in-part of Ser. No. 772,053, Oct. 30, 1968, abandoned. This application Mar. 29, 1973, Ser. No. 346,044

Int. Cl. C04b *35/64*

U.S. Cl. 264—63 **19 Claims**

Group Art Unit 147

References Cited

UNITED STATES PATENTS

2,486,410	11/1949	Howatt	264/63
2,795,564	6/1957	Conn	260/29.6 TA
2,966,719	1/1961	Park	264/63 X
3,423,517	1/1969	Arrhenius	264/63 X
3,472,803	10/1969	Andrews	106/39 X
3,574,029	4/1971	Ehre	264/63 X

1. A process for forming thin sheets having a green strength sufficiently high to permit manual handling which, upon sintering, are capable of providing thin, non-porous articles comprising the steps of

applying a casting composition to a substrate,

drying said casting composition on said substrate to provide a flexible article having green strength sufficiently high to permit handling,

separating said flexible article from said substrate, and

sintering said flexible article, said casting composition consisting essentially of

A. at least about 95 percent by weight of a combination of the following three constituents:

1. from about 65 to 92 percent by weight of ceramic material having a mean particle size of from 0.2 to 12 microns and the particles having a maximum size of about 100 microns,

2. from about 5 to 35 percent by weight of an aqueous acrylic polymer emulsion binder composed of a water-insoluble interpolymer made up of

a. monomeric units having carboxylate groups from at least one polymerizable alpha, beta-unsaturated vinylidene carboxylic acid,

b. monomeric units from at least one polymerizable ester which by itself forms soft polymers and which is selected from the class consisting of esters of acrylic acid and primary alkanols from 1 to 18 carbon atoms, esters of acrylic acid and secondary alkanols of 1 to 18 carbon atoms, esters of methacrylic acid and primary alkanols of 5 to 18 carbon atoms, esters of methacrylic acid and secondary alkanols of 5 to 18 carbon atoms, and

c. monomeric units from at least one polymerizable monovinylidene compound which by itself forms a hard polymer and which is selected from the group consisting of alkyl methacrylates in which the alkyl group has 1 to 4 carbon atoms, tert.-amyl methacrylate, tert.-butyl acrylate, cyclohexyl acrylate, and cyclohexyl methacrylate, the monomeric carboxylate units constituting between 0.5 to 2.5 percent of the interpolymer, the ratio of the monomeric units forming soft polymers to the monomeric units forming a hard polymer being from about 9:1 to about 1:20, said emulsion containing about 40 to 60 percent by weight of water, and

3. an effective amount up to about 15 percent by weight of water, and

B. an effective amount up to 10 percent by weight of at least one surfactant.

B 324,503

PROCESS FOR REDUCING ELECTROSTATIC CHARGE ON POLYTETRAFLUOROETHYLENE AGGLOMERATES

Glenn Frederick Leverett, Vienna, W. Va., assignor to E. I. duPont deNemours and Company, Wilmington, Del.

Filed Jan. 17, 1973, Ser. No. 324,503

Int. Cl. B01j *2/06*

U.S. Cl. 264—117 **5 Claims**

Group Art Unit 147

1. Process for producing agglomerates of particles of finely ground polytetrafluoroethylene which comprises agitating particles of finely ground polytetrafluoroethylene having a particle diameter of between 1 and 100 microns in a mixture of (a) demineralized water having a conductivity of at least 50 micromhos/cm in which the at least 50 micromhos conductivity is obtained by dissolving in the water an electrolyte which is volatile at a temperature of between about 100°C. and 300°C. and (b) an immiscible organic liquid which can be soluble in water in amounts up to 15 percent by weight at the operating temperature of the process and which has a surface tension of no greater than 40 dynes/cm at 25°C., said organic liquid being present in an amount of between 5 and 50 percent by weight of the water and the polytetrafluoroethylene, followed by separating the resulting agglomerates from the water mixture and drying them.

B 329,816

PROCESS FOR CONTINUOUSLY PREPARING EXTRUDABLE, CROSSLINKABLE POLYETHYLENE COMPOSITIONS

Homer Johnnie Cook, Seabrook, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 84,668, Oct. 28, 1970, abandoned. This application Feb. 5, 1973, Ser. No. 329,816

Int. Cl. B01j *2/20*

U.S. Cl. 264—141 **3 Claims**

Group Art Unit 147

References Cited

UNITED STATES PATENTS

2,528,523	11/1950	Kent	264/349
3,121,914	2/1964	Olson et al.	264/211
3,484,507	12/1969	Smith	264/176 R
3,546,326	12/1970	Seifert et al.	264/211

1. In a continuous process for producing a crosslinkable polyethylene composition in the form of molding granules in

which a polyethylene composition is continuously fed into the feed zone of a screw extruder, therein compacted, melted and passed through a metering zone to a discharge die, and in which a solution of a peroxy compound is injected into the molten polyethylene composition inside the extruder prior to extrusion of the molten polyethylene composition through the die, and in which the extrudate is cut into molding granules, the improvement which comprises:

a. selecting as the peroxy compound one which has a flash point of at least 70°C. and an equivalent half-life of more than 1 hour;
b. moderating the peroxy compound prior to injection by forming a moderated peroxy composition by dissolution or dispersion of the peroxy compound in an inert liquid carrier which is compatible with the polyethylene composition, said liquid carrier being selected from the group consisting of light oil and melted wax;
c. continuously injecting the moderated peroxy composition through injection ports into a mixing zone near the discharge end of the extruder at a rate sufficient to produce a concentration of from 0.1 to 5.0 percent by weight of said peroxy compound in the molten polyethylene composition in said mixing zone;
d. maintaining the temperature in said mixing zone at between 130° and 160°C.; and
e. operating the extruder screw at a rate such that the metering zone presses the molten polyethylene composition through the mixing zone and extrusion die at a rate such that the average hold-up time in the mixing zone is less than 12 minutes.

B 292,300

PRODUCTION OF MIXED SHRINKAGE YARN

Cecil E. Reese, Kinston, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 26, 1972, Ser. No. 292,300
Int. Cl. D01d *5/12*
U.S. Cl. 264—210 F **4 Claims**
Group Art Unit 147

References Cited

UNITED STATES PATENTS

3,593,513	7/1971	Reese	57/140
3,705,225	12/1972	Taylor	264/210 F

1. In the production of continuous-filament textile yarns, wherein polyester filaments are melt-spun from spinneret orifices, quenched, combined into a yarn, drawn to at least the natural draw ratio and heat-set, the improvement for preparing mixed-shrinkage, heat-bulkable yarn, wherein the improved process comprises forming filaments having a relative viscosity of 14 to 19 by melt-spinning a polyester, wherein 95 to 100 mole percent of the repeating structural units are ethylene terephthalate and 5 to 0 mole percent of the structural units are ethylene 5-(alkali metal sulfo)-isophthalate, simultaneously forming filaments having a relative viscosity between 27 and 40 by melt-spinning under the same conditions a different type of polyester of ethylene terephthalate which includes other ester units to retard crystallization of the polyester, from 85 to 95 mole percent of the polyester structural units being ethylene terephthalate, quenching the 14 to 19 and 27 to 40 relative viscosity filaments under the same conditions and combining them into a yarn, then drawing the yarn about 4X and heat-setting the yarn at a temperature within the range of 130° to 160°C. to produce 14 to 19 relative viscosity filaments having a density of at least 1.3800, and 27 to 40 relative viscosity filaments having a density of less than 1,3840, a boil-off shrinkage greater than 7.5 percent and a break elongation within 15 percentage units of the 14 to 19 relative viscosity filaments.

B 337,235

METHOD OF RAPIDLY FORMING HOLLOW OBJECTS FROM REINFORCED PLASTIC SHEETING

Leon Segal, Morristown, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 1, 1973, Ser. No. 337,235
Int. Cl. B29c *27/12*
U.S. Cl. 264—255 **14 Claims**
Group Art Unit 147

References Cited

UNITED STATES PATENTS

329,273	10/1885	Chickering	264/325
1,352,161	9/1920	Willard	264/325
2,033,643	10/1936	Neill	264/325 X
2,892,217	6/1959	Luboshez	264/294
3,626,053	12/1971	Hofer	264/294 X
3,655,863	4/1972	Andersen	264/325 X

1. A method of forming a continuous hollow object comprising the steps of:

1. placing a first formable plastic charge of volume sufficient to yield a first section of the desired shape, said section having an expanded end and an opposite unexpanded end, between a relatively moving molding system comprising:
   a. an internal mandrel of a form corresponding to the inner shape of the desired article and
   b. external mated molding sections;
2. closing the system and exerting sufficient pressure and heat to shape the charge around the mandrel;
3. allowing sufficient time to permit the charge to solidify;
4. removing the first section from the mandrel;
5. placing a second formable plastic charge of volume sufficient to yield a second section of the desired shape, said second section having an unexpanded end and an opposite expanded end, between said relatively moving molding system;
6. maintaining said unexpanded end of said first section in contact with the portion of said second formable plastic charge that forms said expanded end of said second section;
7. closing the system and exerting sufficient pressure and heat to shape said second charge around the mandrel;
8. allowing sufficient time to permit said second charge to solidify into a second section having its expanded end in contact with said unexpanded end of the first section;
9. removing said second section from said mandrel; and
10. repeating steps (1) through (9) to form a continuous hollow object.

B 312,139
RELEASE COATING FOR MOLDS

Robert L. Rees, Bartlesville, Okla., assignor to Phillips Petroleum Company

Continuation of Ser. No. 113,607, Feb. 8, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 312,139
Int. Cl. B29c *1/04*
U.S. Cl. 264—297 **10 Claims**
Group Art Unit 147

References Cited

UNITED STATES PATENTS

2,488,446	11/1949	Swiss	117/5.3 X
3,354,129	11/1967	Edmonds	260/79.1
3,487,454	12/1969	Oates	260/900
3,492,125	1/1970	Ray	99/1

OTHER PUBLICATIONS

Modern Plastics Encyclopedia, October 1970, Vol. 47, No. 10A, TP 986. AZMS, pp. 208 & 213.

1. A method of molding which comprises:

a. applying a mold release coating composition consisting essentially of polyphenylene sulfide in an amount within the range of from about **50** to about **90** parts by weight, polytetrafluoroethylene in an amount up to **10** parts by weight and a filler in an amount within the range of from about **10** to about **50** parts by weight said filler selected from the group consisting of titanium oxide, aluminum oxide, iron oxide and clay to the inner surface of a mold;

b. curing said coating;

c. introducing into said mold and into contact with the cured coating a polymeric composition moldable at a temperature less than that temperature at which the mold release coating composition becomes inoperable as a satisfactory coating;

d. molding said moldable polymeric composition;

e. removing said moldable polymeric composition from said mold as a molded object; and

f. repeating steps (c), (d), and (e) to produce a multiplicity of molded objects.

B 322,564
METHOD FOR SEPARATING ISOTOPES

Bernhart E. Jepson, Dayton, Ohio, assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Jan. 20, 1973, Ser. No. 322,564
Int. Cl. C01g *57/00*; **C01f** *17/00*
U.S. Cl. 423—2 **6 Claims**
Group Art Unit 223

References Cited

OTHER PUBLICATIONS

Pedersen, J. Amer. Chem. Soc., Vol. 92, pp 391 to 394 (1970) QD1A5

1. A method for obtaining metal values enriched in one of the isotopes of said metal, said metal being selected from the group consisting of sodium, potassium, rubidium, cesium, magnesium, calcium, strontium, barium, lanthanum, cerium, silver, zinc, cadmium, mercury, titanium, lead and iron, comprising contacting a first aqueous phase containing a water-soluble halide of said metal with an organic phase comprising a macrocyclic polyether selected from the compounds set forth in Table I thereby forming a macrocyclic polyether complex of said metal, said complex being enriched in the lighter isotope of said metal, separating said macrocyclic polyether complex from the resulting metal depleted aqueous phase, contacting said separated complex with a second aqueous phase thereby transferring said complexed metal from said macrocyclic polyether to said second aqueous phase, and separating the resulting macrocyclic polyether from the light isotope enriched second aqueous phase.

B 333,928
METHOD OF CONCENTRATING GALLIUM

Harry M. Stevens, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 20, 1973, Ser. No. 333,928
Int. Cl. C01g *15/00*
U.S. Cl. 423—129 **5 Claims**
Group Art Unit 113

References Cited

UNITED STATES PATENTS

2,582,376	1/1952	Frary	423/122 X
2,582,377	1/1952	Brown	423/129 X
2,582,378	1/1952	Brown	423/129 X

OTHER PUBLICATIONS

Sheka, "The Chemistry of Gallium," 1966, Pages 223–225.

Waters et al., "Bureau of Mines, Report of Investigations 6940," April, 1967, Pages 5–9, 30–33.

1. A method of concentrating gallium from phosphorus furnace treater dust comprising:

A. contacting the treater dust with an aqueous slurry of an alkaline earth compound, the solution having a pH of greater than 11;

B. separating the alkaline liquid containing the gallium from the treater dust; and

C. recovering the gallium from the liquid.

B 269,673
CATALYST REACTOR FOR OXIDIZING CARBON MONOXIDE AND HYDROCARBONS IN GASEOUS STREAM

Conroy D. Anderson, Turnersville; David W. Carlson, Willingboro; Stephen M. Oleck, Moorestown, and William A. Stover, Woodbury, all of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed July 7, 1972, Ser. No. 269,673
Int. Cl. B01d *53/34*
U.S. Cl. 423—213.7 **7 Claims**
Group Art Unit 113

References Cited

UNITED STATES PATENTS

2,004,865	6/1935	Grison	423/213
3,086,839	4/1963	Bloch	423/213
3,265,637	8/1966	Stiles	423/213 X
3,295,919	1/1967	Henderson et al.	423/213.5
3,485,593	12/1969	Lenane et al.	423/213 X
3,540,838	11/1970	Reitmeier et al.	423/213
3,741,725	6/1973	Graham	423/213.5

FOREIGN PATENTS OR APPLICATIONS

1,010,783	11/1965	Great Britain	423/213

OTHER PUBLICATIONS

Anderson et al., Ind. & Eng. Chemistry; Vol. 53, No. 10; 10–1961.

1. In a dual-bed process for reducing the amount of low molecular weight hydrocarbons and carbon monoxide in a gaseous stream, the improvement which comprises the following sequential steps:

a. passing said gaseous stream through a first catalyst bed consisting essentially of 7–20 weight percent copper oxide and 0.01–5 weight percent palladium, said copper oxide and palladium being co-impregnated from a non-acidic solution of a cuprous salt and a palladium salt upon a porous inorganic oxide support comprising at least 50 percent by weight of alumina, and thereafter

b. passing the gaseous stream from said first catalyst bed through a second catalyst bed consisting essentially of 0.01–5 weight percent palladium impregnated on a porous inorganic oxide support, whereby the low temperature conversion of said low molecular weight hydrocarbons and carbon monoxide is improved.

B 414,288
METAL BORACITES

Tom Allen Bither, Jr., Wilmington, Del., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 181,605, Sept. 17, 1971, Pat. No. 3,801,703. This application Nov. 9, 1973, Ser. No. 414,288

Int. Cl. C01b *35/00, 9/08*

U.S. Cl. 423—277 **8 Claims**

Group Art Unit 113

References Cited

UNITED STATES PATENTS

3,384,447	5/1968	Schmid	423/277

1. Metal boracites of the formula

$$M_3B_7O_{13}F$$

wherein M is at least one divalent ion of Mg, Cr, Mn, Fe, Co, Zn or Cd.

B 350,219
MOLECULAR WEIGHT CONTROL IN $[NPCl_2]_n$ POLYMERIZATION

Harry Rex Allcock, and James Earl Gardner, both of State College, Pa., assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 11, 1973, Ser. No. 350,219

Int. Cl. C01b *25/10, 21/52*

U.S. Cl. 423—300 **3 Claims**

Group Art Unit 142

References Cited

UNITED STATES PATENTS

3,370,020	2/1968	Allcock et al.	260/2 P
3,443,913	5/1969	Bienick et al.	260/2 P

1. In the polymerization of chlorocyclophosphazenes to produce a linear polymer $(NPCl_2)_n$ product in which n is from about 16 to about 20,000, wherein the polymerization of cyclo trimer, tetramer or mixtures thereof is conducted at temperatures of between 200° and 300°C, the improvement which comprises: maintaining an amount of PCl_5 between 0.25 moles and 1×10^{-5} moles of PCl_5 per mole of chlorophosphazene, present with said chlorophosphazene and conducting the polymerization in the presence of said amount of PCl_5.

B 345,422
HIGH TEMPERATURE INSULATING CARBONACEOUS MATERIAL

Robert D. Klett, Albuquerque, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 27, 1973, Ser. No. 345,422

Int. Cl. C01b *31/02, 3/04*

U.S. Cl. 423—445 **9 Claims**

Group Art Unit 113

References Cited

UNITED STATES PATENTS

982,950	1/1911	Grunzweig	201/25
1,369,428	2/1921	Hawley	201/6
2,650,190	8/1953	Steinschlaeger	201/25 X
3,302,999	2/1967	Mitchell	423/448
3,387,940	6/1968	McHenry et al.	423/448
3,574,548	4/1971	Sands et al.	423/448
3,639,266	2/1972	Battista	252/421

1. A process for manufacturing thermal insulating carbonaceous material for use at temperatures in excess of 2000°C comprising; comminuting natural tetrakaidecahedronal cell structure cork to from about 150 microns to about 2000 microns diameter granules, confining said granules, heating said granules while so confined to interbind and cure said granules into a shaped form, heating said shaped form to a temperature of from about 900°C to about 1200°C in from about 30 to about 100 hours to carbonize said shaped form to a high temperature insulative material, and holding at said temperature for a period of from about 1 to about 5 hours.

8. A thermal insulating carbonaceous form for use at temperatures in excess of 2000°C consisting essentially of carbonized cork havng tetrakaidecahedronal cells structure, density of from about 5 to about 30 pounds per cubic foot, and cell diameters of about 0.007 inch produced by the process of claim 1.

B 315,397
METHODS FOR PURIFICATION OF HYDROGEN CHLORIDE

Walker H. Rideout, and Palmer G. Glenn, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 15, 1972, Ser. No. 315,397

Int. Cl. C01b *7/08*

U.S. Cl. 423—481 **9 Claims**

Group Art Unit 113

References Cited

UNITED STATES PATENTS

1,421,733	7/1922	Snelling	423/488
2,196,246	4/1940	Brown et al.	423/488
3,260,059	7/1966	Rosenberg et al.	423/488 X
3,356,749	12/1967	Van Dijk	423/488 X
3,377,137	4/1968	Latham, Jr.	423/486 X
3,446,586	5/1969	Young	423/488

FOREIGN PATENTS OR APPLICATIONS

609,682	11/1960	Canada	423/488
681,079	2/1964	Canada	423/488

1. A method of purifying by-product hydrogen chloride obtained in the process of thermally cracking ethylene dichloride to form vinyl chloride, said by-product hydrogen chloride containing more than 50 ppm of organic impurities selected from the group consisting of ethylene, acetylene, vinyl chloride, ethyl chloride and vinylidene chloride; wherein the improvement comprises reducing by absorption and removal the said selected organic impurities in by-product hydrogen chloride to a level of less than 50 ppm by combining in a reaction zone (a) the impure by-product hydrogen chloride; (b) Cl_2, in at least a stoichiometric mole ratio to said organic impurities; and (c) activated carbon, at a temperature of at least 80°C., and a nominal residence time of at least 1 second.

B 323,127
PRODUCTION OF HYDROGEN PEROXIDE USING THE ANTHRAQUINONE PROCESS

Jack R. Kirchner, and Lawrence G. Vaughan, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 79,643, Oct. 9, 1970, abandoned. This application Jan. 12, 1973, Ser. No. 323,127

Int. Cl. C01b *15/02*

U.S. Cl. 423—588 **4 Claims**

[56] **Group Art Unit 113**

References Cited

UNITED STATES PATENTS

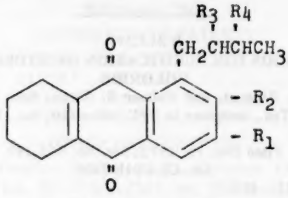
2,668,753	2/1954	Harris	423/588
3,032,560	5/1962	Dawsey	260/369
3,767,779	10/1973	Coingt	423/589
3,778,452	12/1973	Jesey et al.	423/588

FOREIGN PATENTS OR APPLICATIONS

614,296	2/1961	Canada	260/369
607,627	11/1960	Canada	423/589

1. In a cyclic process for producing hydrogen peroxide in which a working solution of an anthraquinone working intermediate in a water-immiscible solvent is hydrogenated in a

reduction stage and the resulting solution of the anthrahydroquinone form of said intermediate is oxidized in an oxidation stage to regenerate said solution of the anthraquinone working intermediate for recycling to said reduction stage after the hydrogen peroxide simultaneously formed in said oxidation stage is removed from said working solution, the improvement comprising employing as said anthraquinone working intermediate a 5,6,7,8-tetrahydro-1-alkyl-9,10-anthraquinone of the formula



in which each of R_1, R_2, R_3 and R_4 is hydrogen or a 1 to 8 carbon straight chain alkyl hydrocarbon group.

B 336,978

METHOD OF PREPARING TITANIUM DIOXIDE PIGMENT

Max G. Basque, Pittsburgh; James E. Magner, Antioch; Joseph P. Surls, Walnut Creek, and Ben F. West, Orinda, all of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 189,827, Oct. 18, 1971, Pat. No. 3,749,764. This application Mar. 1, 1973, Ser. No. 336,978
Int. Cl. C01g *23/04*
U.S. Cl. 423—611 **5 Claims**
Group Art Unit 113

References Cited

UNITED STATES PATENTS

3,329,484	7/1967	Long et al.	423/611
3,528,773	9/1970	Surls et al.	423/612
3,635,671	1/1972	Tveter et al.	423/611
3,703,357	11/1972	Surls et al.	423/611
3,749,764	7/1973	Basque et al.	423/611

1. A process for the preparation of composite titanium dioxide pigment particles, each consisting of one or more elongate rutile monocrystals having lengths within the range of from 0.15 to 15 microns, diameters within the range of 0.01 to 0.1 microns and aspect ratios of from 5 to 200, surrounded by similarly elongated rutile crystallites having lengths within the range of 0.005 to 0.05 microns, diameters within the range of 0.01 to 0.1 microns and aspect ratios of from 5 to 50 and from 1 to 10 volume percent of interstitial non-rutile titanium dioxide, which comprises:

contacting said rutile monocrystals for at least 3 minutes with an acidic aqueous titanium chloride solution under at least autogenous pressure and at a temperature of from 80° to 150°C., thereby causing cross-sectional particle growth by deposition on said monocrystals of titanium dioxide hydrolysate in the form of said crystallities disposed with said interstitial titanium dioxide around said monocrystals in a configuration generally parallel thereto and continuing said contact until a growth ratio of up to about 18 has been achieved;

said solution containing from 0.1 to 60 grams of dissolved titanium per liter, from 0.004 to 9 gram ions of chloride per liter, not more than 0.001 gram ions of phosphate per liter and not more than 0.01 gram ions of sulphate and/or bisulphate per liter; and

the weight of titanium present in said monocrystals being from 1 to 50 percentof the weight of dissolved titanium in said solution

---

B 262,378

METHOD FOR PREPARING SUCROSE COMPOSITION CONTAINING CHROMIUM III SALT

John Carl Godfrey, Syracuse, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed June 13, 1972, Ser. No. 262,378
Int. Cl. A23l *1/30;* **A61k** *25/00*
U.S. Cl. 424—137 **7 Claims**
Group Art Unit 171

References Cited

OTHER PUBLICATIONS

Henry A. Schroeder, J. Nutr. 97(2), 237–242, (1969).
Chemical Abstracts, 70:18262s, (1969).
Chemical Abstracts, 70:26758y, (1969).

1. In a method of preparing a highly refined sucrose composition having the property of reducing the severity or incidence of atherosclerosis or adult onset diabetes consisting essentially of a mixture of sucrose and a pharmaceutically acceptable salt of a chromium III ion, the steps comprising:

A. mixing a higly refined sucrose in powdered form with a pharmaceutically acceptable salt of a chromium III ion, said salt being incorporated in said mixture in an amount sufficient to provide a concentration of said salt of 500 ppm per gram, basis the weight of said sucrose,

B. grindng said mixture unitl a uniform mixture of said highly refined sucrose and said salt of a chromium III ion is produced to provide a concentrate,

C. adding said concentrate to a powdered highly refined sucrose to form a mixture thereof, said concentrate being added in an amount sufficient to provide a concentration of said salt of a chromium III ion in said last named mixture in the range of from 0.5 to 5.0 ppm per gram, basis the total weight of said highly refined sucrose in said composition.

B 354,098

ISOLATION AND PURIFICATION OF ACTIVE PRINCIPLE OF FRUIT OF SYNSEPALUM DULCIFICUM

Robert I. Henkin, Bethesda, Md., and Eugene L. Giroux, Strasbourg, France, assignors to The United States of America as represented by the Secretary of Health, Education, and Welfare

Filed Apr. 24, 1973, Ser. No. 354,098
Int. Cl. A61k *27/14*
U.S. Cl. 424—195 **4 Claims**
Group Art Unit 125

References Cited

OTHER PUBLICATIONS

Unilever – Chem. Abst. Vol. 73 (1970) page 65205x.
Brouwer, J. N. – Chem. Abst. Vol. 70 (1969) page 65187f.

1. A process for obtaining the active principle of the fruit of the plant *Synsepalum dulcificum* which comprises:

a. contacting the fruit of *Synsepalum dulcificum* with a suspension of polyvinyl pyrrolidone in a basic medium;

b. filtering the suspension to obtain a supernatant containing the active principle of the fruit;

c. adding ξ-amino caproic acid to the supernatant;

d. acidifying the supernatant to reduce the pH to the range of 6.0 – 6.5;

e. filtering the supernatant to obtain a solution of the active principle;

f. adsorbing the active principle on at least one chromatographic column, with at least one column employing a support material selected from the group consisting of cellulose and polyacrylamide - based strongly basic anion exchangers; and

g. eluting the active principle with a buffered solution of Na_2HPO_4 to recover the active principle from the column.

B 313,531

1-SUBSTITUTED-4-ARYL-2-(1H)-QUINAZOLINONES AS PHARMACEUTICAL AGENTS

Hans Ott Pfeffingen, Basel-Land, Switzerland, assignor to Sandoz, Inc., Hanover, N.J.

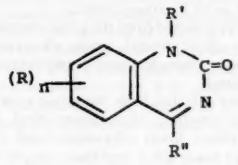
Division of Ser. No. 775,201, Nov. 12, 1968, Pat. No. 3,723,432, which is a continuation-in-part of Ser. No. 741,804, July 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 707,932, Feb. 26, 1968, abandoned, which is a continuation-in-part of Ser. No. 672,739, Oct. 4, 1967, abandoned, which is a continuation-in-part of Ser. No. 636,015, May 4, 1967, abandoned, which is a continuation-in-part of Ser. No. 575,511, Aug. 29, 1966, abandoned. This application Dec. 8, 1972, Ser. No. 313,531
Int. Cl. A61u *27/00*
U.S. Cl. 424—251 46 Claims
Group Art Unit 125

References Cited

UNITED STATES PATENTS

3,452,041 6/1969 Bell et al. 260/309.5

24. A pharmaceutical composition for treating inflammation and/or pain in animals comprising an inert pharmaceutically acceptable carrier and an inflammation and/or pain treating effective amount of a compound of the formula:



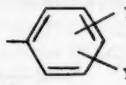
wherein

R represents hydrogen, halo, lower alkyl, hydroxy, lower alkoxy, nitro, amino, acetamido, mercapto, cyano, trifluoromethyl, lower alkylthio, N-(lower)alkylamino or di(lower)alkylamino;

n is 1 or 2, and when 2 then: A) one and the other R is, independently, halo, lower alkyl or lower alkoxy, or one R is from the group of halo, lower alkyl and lower alkoxy and the other R is from the group of nitro, amino, N-(lower)alkylamino or di(lower)alkylamino or B) one R is N-(lower)alkylamino or di(lower)alkylamino while the other R is nitro;

R′ represents lower alkyl, allyl, methallyl or propargyl; provided R′ is not an unsaturated hydrocarbon substituent when R is N-alkylamino;

R″ represents phenyl or substituted phenyl of the formula



Y represents halo, hydroxy, lower alkyl, lower alkoxy or trifluoromethyl, and

Y′ represents hydrogen, halo, hydroxy, lower alkyl or lower alkoxy

or a pharmaceutical acceptable acid addition salt thereof.

B 336,946

METHOD OF PRODUCING VASODILATION USING CERTAIN 3-SUBSTITUTED-QUINAZOLINE DERIVATIVES

Horacio Vidrio, Mexico City, Mexico, assignor to Miles Laboratories, Inc.,, Elkhart, Ind.

Continuation-in-part of Ser. No. 132,911, April 9, 1971, abandoned. This application Mar. 1, 1973, Ser. No. 336,946
Int. Cl. A61k *27/00*
U.S. Cl. 424—251 23 Claims
Group Art Unit 125

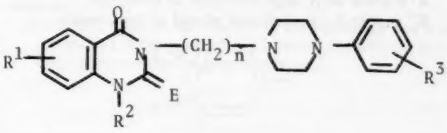
References Cited

UNITED STATES PATENTS

3,274,194 9/1966 Hayao 260/256.4

1. A therapeutic method of producing vasodilation in an animal in need of such therapy comprising:

administering to said animal an effective dose of a substance selected from the group consisting of compounds having the formula



and pharmaceutically acceptable acid addition salts thereof, wherein:

R^1 is selected from the group consisting of hydrogen and halogen;

R^2 is selected from the group consisting of hydrogen and methyl;

R^3 is selected from the group consisting of hydrogen and halogen;

E is selected from the group consisting of oxygen and sulfur; and

n is an integer ranging from 1 to 6, inclusive.

B 368,862

1-SUBSTITUTED-QUINAZOLINE-2(1H)-THIONES IN THE TREATMENT OF INFLAMMATION

Hans Ott Pfeffingen, Basel-Land, Switzerland, assignor to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 78,587, Oct. 6, 1970, Pat. No. 3,764,600, which is a continuation of Ser. No. 819,477, April 25, 1969, , which is a continuation-in-part of Ser. No. 741,805, July 1, 1968,. This application June 11, 1973, Ser. No. 368,862
Int. Cl. A61u *27/00*
U.S. Cl. 424—251 19 Claims
Group Art Unit 125

References Cited

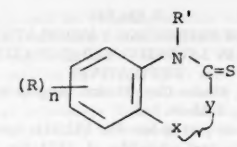
UNITED STATES PATENTS

3,453,179 7/1969 Greenspan et al. 195/51

FOREIGN PATENTS OR APPLICATIONS

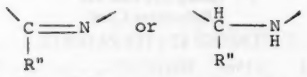
1,520,743 3/1968 France

11. A pharmaceutical composition comprising an inert pharmaceutically acceptable carrier and an anti-inflammatory treating effective amount of a compound of the formula:



wherein

x y is either

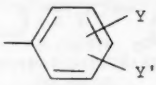


R is, independently, hydrogen; halo having an atomic weight no greater than 80; lower alkyl; lower alkoxy; nitro; cyano; lower alkylthio; trifluoromethyl; or di(lower)alkylamino;

n is 1 or 2, and when 2 then one and the other R is, independently, halo, lower alkyl or lower alkoxy, or the other R is di(lower)alkylamino;

R′ is lower alkyl; allyl; methallyl; or propargyl;

R″ is phenyl; or substituted phenyl of the formula:



Y represents halo (as defined above); lower alkyl; lower alkoxy; or trifluoromethyl; and

Y″ represents hydrogen, halo (as defined above); lower alkyl; or lower alkoxy.

B 344,479

METHOD FOR TREATMENT OF BACTERIAL PLANT DISEASE

John F. Gerster, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 26, 1973, Ser. No. 344,479

Int. Cl. A01n *9/00, 9/22*

U.S. Cl. 424—258 **2 Claims**

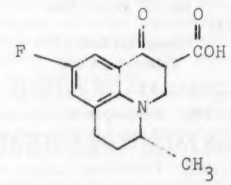
Group Art Unit 125

References Cited

UNITED STATES PATENTS

3,341,528 9/1967 Shavel et al. ..... 260/289 R

1. A method for controlling plant disease caused by *Erwinia amylovora*, *Xanthomonas pruni* or *Pseudomonas glycinea* which comprises contacting the foliage of a plant or drenching the soil surrounding a plant with at least an effective, nonphytotoxic controlling amount of a carboxylic acid of the formula



or horticulturally acceptable metal, amine or ammonium salt thereof.

B 261,828

2-SUBSTITUTED PHENYLHYDRAZONOIMIDAZOLENINE FUNGICIDAL AND BACTERICIDAL AGENTS

Karl Heinz Buchel, Wuppertal-Elberfeld; Paul-Ernst Frohberger; Hans Scheinpflug, both of Leverkusen, and Edgar Enders, Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 12, 1972, Ser. No. 261,828

Claims priority, application Germany, June 15, 1971, 2129524

Int. Cl. A01n *9/22*

U.S. Cl. 424—273 **9 Claims**

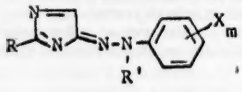
Group Art Unit 125

References Cited

OTHER PUBLICATIONS

Fargher et al., J. Chem. Soc., (London), Vol. 115, (1919), pp. 217–260.

1. A method of combating pests selected from the group consisting of fungi and bacteria which comprises applying to said pests or their habitat a fungicidally or bactericidally effective amount of a compound of the formula



in which

R is alkyl of up to 6 carbon atoms,

R′ is a member selected from the group consisting of hydrogen, lower alkylcarbonyl, lower alkoxycarbonyl, lower alkylsulfonyl, phenylcarbonyl, phenoxycarbonyl and phenylsulfonyl,

X is a member selected from the group consisting of halogen, trifluoromethyl, nitro, lower alkyl, lower alkoxy, lower alkylthio, lower alkylamino and di-lower alkylamino, said lower alkyl and lower alkoxy radicals in R_1 and X having up to 6 carbon atoms and

m is 0 to 3.

B 379,038

ANTI-ARTHRITIC COMPOSITIONS COMPRISING A 3-ARYL 2-THIOHYDANTOIN AND METHODS OF PRODUCING ANTI-ARTHRITIC ACTIVITY

Arthur Magnani, Wynnewood, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Filed July 13, 1973, Ser. No. 379,038

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **11 Claims**

Group Art Unit 125

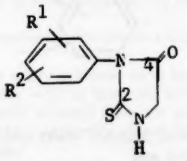
References Cited

OTHER PUBLICATIONS

Chem. Abst.(1), 55–4507f (1962).

Chem. Abst.(2), 65–2246b (1966).

1. A tablet or capsule pharmaceutical composition having anti-arthritic activity, in dosage unit form, comprising a nontoxic pharmaceutical carrier and an effective but nontoxic amount of a 3-aryl-2-thiohydantoin of the formula:



in which R^1 and R^2 are hydrogen, chloro, bromo, fluoro or alkyl of one or two carbon atoms, at least one of R^1 and R^2 being other than hydrogen.

B 353,986

PHENOXYACETIC ACID DERIVATIVES AS DIURETIC AGENTS

Jean Jacques Godfroid, Noisy-le-Sec, and Jean Eugene Thuillier, Paris, both of France, assignors to C.E.R.P.H.A. (Centre Europeen de Recherches Pharmacologiques), Acueil, Val de Marne, France

Division of Ser. No. 78,976, Oct. 7, 1970, Pat. No. 3,758,506. This application Apr. 24, 1973, Ser. No. 353,986

Claims priority, application France, Oct. 10, 1969, 69.34760

Int. Cl. A61k *27/00*

U.S. Cl. 424—275 **3 Claims**

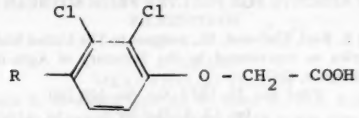
Group Art Unit 125

References Cited

UNITED STATES PATENTS

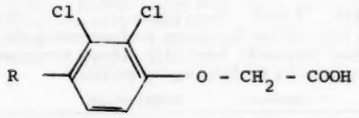
3,751,430 8/1973 Libis et al. 424/275

1. A therapeutic composition in dosage form, particularly for increasing diuresis, which contains as active principle at least one phenoxyacetic acid compound selected from the group consisting of a phenoxyacetic acid of the formula



wherein R is 2-furyl keto, 2-thienyl keto, or 2(5-methyl thienyl) keto an alkali metal salt of said acid, and an addition salt of said acid with a pharmaceutically acceptable base together with a pharmaceutically acceptable diluent, said active principle being present in an amount of 0.050 to 1 g.

3. A process for treating a human or non-human in need of diuretic treatment which comprises the oral, endorectal or parenteral administration thereto, in an amount of from 10–50 mg/kg, of a phenoxyacetic acid compound selected from the group consisting of a phenoxyacetic acid of the formula



wherein R is 2-furyl keto, 2-thienyl keto or 2(5-methyl thienyl) keto, an alkali metal salf of said acid, and an addition salt of said acid with a pharmaceutically acceptable base.

B 379,172

SUBSTITUTED (NITROFURYL-ACRYLIDENE) HYDRAZINES WITH ANTIBACTERIAL PROPERTIES

Etienne Szarvasi, Charbonnieres-les-Bains, and Louis Fontaine, Lyon, both of France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique, Lyon, France

Continuation-in-part of Ser. No. 215,677, Jan. 5, 1972,. This application July 13, 1973, Ser. No. 379,172

Claims priority, application France, Jan. 7, 1971, 71.00283

Int. Cl. A61k *27/00*

U.S. Cl. 424—275 **9 Claims**

Group Art Unit 125

References Cited

OTHER PUBLICATIONS

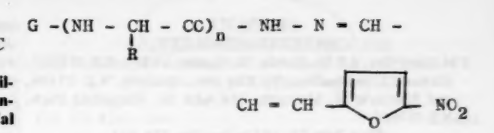
Stvadins et al., Latviajas PSR Zinatnu Akad, Vestis, 1958, No. 1, pp. 113–120.

Chemical Abstracts 54: Col. 20085g (1960).

1. A pharamaceutical composition adapted for administration to obtain an antibacterial effect, comprising, per dosage unit

a pharmaceutically acceptable excipient, and

an antibacterially effective non-toxic amount of a compound of the formula

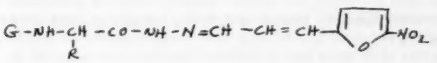


wherein *n* is 1 or 0; G is thenoyl, nitrothenoyl or carbobenzoxy; and R is H, methyl, butyl, isobutyl, δ-(2-furoyl) aminobutyl, benzyl, hydroxymethyl or p-hydroxybenzyl.

8. A pharamaceutical composition adapted for administration to obtain an antibacterial effect, comprising, per dosage unit

a pharmaceutically acceptable excipient, and

an antibacterially effective nontoxic amount of a compound of the formula



wherein

G is furoyl, thenoyl, nitrothenoyl or carbobenzoxy; and R is H, methyl, butyl, isobutyl, δ-(2-furoyl) aminobutyl, benzyl, hydroxymethyl or p-hydroxybenzyl.

B 371,805

METHOD OF RELIEVING THE DISCOMFORT OF PHARYNGITIS

John W. Ward, Richmond, and Robert A. Lybrand, Ashland, both of Va., assignors to A. H. Robins Company Incorporated, Richmond, Va.

Continuation-in-part of Ser. No. 167,869, July 30, 1971, abandoned. This application June 20, 1973, Ser. No. 371,805

Int. Cl. A61k *27/00*

U.S. Cl. 424—315 **2 Claims**

Group Art Unit 125

References Cited

UNITED STATES PATENTS

2,004,873 6/1935 Kirstahler et al. 424/56
2,054,742 9/1936 Elbel 424/56
3,279,987 10/1966 Vierling 424/247

OTHER PUBLICATIONS

Kirk–Othmer, Encyclopedia of Chemical Technology, 12, (1969), pp. 361–363 & 367–372.

Vocac et al., Chemical Abstracts, 71:53567n, (1969).

Vocac et al., chemical Abstracts, 72:30055a, (1970).

Vocac et al., Chemical Abstracts, 69:94870h, (1968).

1. A method for the alleviation of discomfort of a human being having pharyngitis which consists of said human being gargling for a period of from about 15 seconds to about three minutes with an effective amount of a composition containing 0.5 to 20 percent of a lignosulfonate having a molecular weight greater than 10,000 and a pharmaceutically acceptable carrier therefor, said gargling followed by expectoration.

2. A method for the alleviation of discomfort of a human being having pharyngitis which consists of said human being sipping in small portions over a period of two to four minutes an effective amount of a composition containing 0.5 to 20 percent of lignosulfonate having a molecular weight greater than 10,000 and a pharmaceutically acceptable carrier therefor.

B 276,271
SWEETNESS INDUCER

Chi-Hang Lee, 65 W. Burda Pl., Spring Valley, N.Y. 10977; Richard J. Scarpellino, 96 Elm Ave., Ramsey, N.J. 07446, and Marjorie M. Murtagh, 244 44th St., Ridgefield Park, N.J. 07660

Filed July 28, 1972, Ser. No. 276,271
Int. Cl. A23g *3/30;* **A23l** *1/26*
U.S. Cl. 426—3 **12 Claims**
Group Art Unit 172

References Cited

UNITED STATES PATENTS

3,676,149 7/1972 Fennell et al. ..... 99/141 R

OTHER PUBLICATIONS

Merck 8th ed., Merck & Co. Inc., Rahway, N.J. 1968 p. 316.

Merck 8th ed., Merck & Co. Inc., Rahway, N.J. 1968 p. 243.

Chem. Absts. Vol. 67, 1967 72605g.

1. A foodstuff having incorporated therein an amount of a sodium or amine salt of an acid selected from the group consisting of chlorogenic acid, cynarin, isochlorogenic acid, neochlorogenic acid and combinations thereof effective to induce sweetness in the foodstuff.

4. The foodstuff of claim **3** wherein the potassium salt chlorogenic acid is extracted from artichoke.

B 276,560
HEAT-AND-SERVE PACKAGES FOR MEAT PRODUCTS

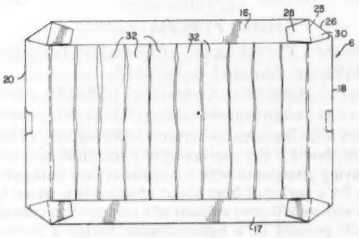
John C. Bard, and Oscar E. Seiferth, both of Madison, Wis., assignors to Oscar Mayer & Co. Inc., Madison, Wis.

Filed July 31, 1972, Ser. No. 276,560
Int. Cl. B65b *25/22, 25/06*
U.S. Cl. 426—113 **8 Claims**
Group Art Unit 177

References Cited

UNITED STATES PATENTS

1,422,540	7/1922	Christensen	229/41 B
1,993,323	3/1935	Frankenstein	229/41 B
2,596,514	5/1952	Vehlein	426/121 X
2,911,306	11/1959	Griem	426/121
3,236,434	2/1966	Taddeau	229/41 B X
3,276,662	10/1966	Farquhar	229/41 B X
3,619,215	11/1971	Bard et al.	426/113
3,704,824	12/1972	Croley	229/32



1. A compact generally flat heat-and-serve package of meat product comprising a disposable oven-heatable tray formed with two opposing pairs of interconnected foldable sides from sheet material capable of retaining melted fat and greasy liquid, a deposit of meat product from which fat or greasy liquid renders on heating laid generally flatwise over the botton of said tray with one pair of opposing sides thereof folded inwardly and downwardly on the adjacent margins of said deposit and with the other pair of opposing sides thereof extending outwardly and unfolded from the adjacent margins of said deposit, said tray and contents being folded or doubled over on itself so that said pair of outwardly extending unfolded sides overlie each other in superposed relationship, and an envelope of disposable film having air, moisture and grease barrier properties snugly enclosing said folded tray and its contents so as to retain it in a compact generally flat condition with said pair of outwardly extending unfolded sides in superposed engagement, said foldable sides being erectable on removal of said film and un-doubling of said tray to form a continuous upstanding sidewall around said tray bottom, and the adjacent ends of said interconnected foldable sides being interconnected by foldable corner formations which in folded flattened condition and with said one pair of opposing sides folded inwardly and downwardly on the adjacent margins of said deposit provide said opposing pair of unfolded outwardly extending sides with beveled corners.

B 328,200
FEED ADDITIVE FOR POULTRY FROM SOYBEAN OIL SOAPSTOCKS

Robert E. Beal, Elmwood, Ill., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 31, 1973, Ser. No. 328,200
Int. Cl. A23k *1/00*
U.S. Cl. 426—177 **1 Claim**
Group Art Unit 175

References Cited

UNITED STATES PATENTS

2,789,120	4/1957	Cavanagh	260/412.3
2,916,385	12/1959	Bauerfeind et al.	426/177
2,924,525	2/1960	Kruse et al.	424/343
3,523,138	8/1970	Grant	426/807

FOREIGN PATENTS OR APPLICATIONS

817,834 8/1959 Great Britain ..... 99/2 OE

1. A feed additive for poultry feed comprising the acid neutralized soapstocks from alkali refined nondegummed soybean oil having the following composition:

Component	Weight percent
Total fatty acids	50 to 70
Free fatty acids	25 to 35
Unsaponifiables	2
Phosphorous	1
Sodium	1 to 5
Carotene	0.02 to 0.06
Xanthophyll	0.02 to 0.03
Moisture	4 to 20;

said additive being characterized as being a waxy solid at a temperature of 25°C., and having a pH of 6.9 to 7.1.

B 332,527
SWEETNESS INDUCER

Chi-Hang Lee, 65 W. Burda Pl., Spring Valley, N.Y. 10977; Richard John Scarpellino, 96 Elm Ave., Ramsey, N.J. 07446, and Marjorie Mary Murtagh, 416 Calhoun Ave., Bronx, N.Y. 10465

Continuation-in-part of Ser. No. 276,271, July 28, 1972, abandoned. This application Feb. 14, 1973, Ser. No. 332,527
Int. Cl. A23l *1/26*
U.S. Cl. 426—190 **9 Claims**
Group Art Unit 172

References Cited

UNITED STATES PATENTS

3,676,149 7/1972 Fennel et al. ..... 99/141 R

OTHER PUBLICATIONS

Merck 8th Ed., Merk & Co., Inc., Rahway, N.J. 1968 p. 316.

Merck 8th ed., Merek & Co., Inc., Rahway, N.J. 1968 p. 243.

Chem. Absts. Vol. 67, 1967, 72 605g.

1. A sweetness inducing composition comprising a salt selected from the group consisting of the alkaline earth, sodium, ammonium-based and ferric-based salts of cynarin and combinations thereof.

3. A food having induced sweetness comprising a foodstuff having incorporated therein an effective amount of a sweetness inducer selected from the group consisting of the alkaline earth, alkali metal, ammonium-based and ferric-based salts of chlorogenic acid, caffeic acid, cynarine, isochlorogenic acid, neochlorogenic acid and combinations thereof.

---

cA

B 395,496

MEAT ANALOG SYSTEM

Alonzo H. R. Feldbrugge, 58 W. 83rd St., New York, N.Y. 10024; Marshall M. Rankowitz, 3419 Irwin Ave., Bronx, N.Y. 10463, and Arno Huste, 85-26 66th Ave., Rego Park, N.Y. 11374

Continuation of Ser. No. 114,720, Feb. 11, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,496

Int. Cl. A23j *3/00*

U.S. Cl. 426—350 **8 Claims**

Group Art Unit 172

References Cited

UNITED STATES PATENTS

3,093,483	6/1963	Ishler et al.	426/137
3,658,550	4/1972	Hawley	426/350
3,719,498	3/1973	Leidy et al.	426/350
3,719,499	3/1973	Hai et al.	426/350

1. A process for producing a food product which resembles meat products made from meat emulsions comprising:

a. contacting a polymeric carbohydrate gel precursor with a material selected from the group consisting of non-rendered animal fat, rendered animal fat, vegetable oil, and combinations thereof and gelling said gel precursor to substantially encapsulate said material;

b. forming a uniform mixture of:

1. a protein gel precursor consisting of a vegetable proteinaceous material and a material selected from the group consisting of albumen, casein, whey, and mixtures thereof, said vegetable proteinaceous material having a vegetable protein content of above about 30 percent by weight and wherein the minimum weight ratio of the vegetable protein to albumen, casein or whey is about 3.4:1, 5:3, and 1:1, respectively, or a weighted ratio for mixtures thereof and wherein the maximum weight ratio of vegetable protein to albumen, casein, whey or mixtures thereof is about 40:1,

2. water in an amount in the range of from about 42 to about 74 percent by weight of the mixture, and

3. the substantially encapsulated material of a) in an amount in the range of from about 5 to about 30 percent by weight of the mixture;

c. shaping said uniform mixture to a desirable form; and heating the shaped mixture to set the protein gel precursor to a stable, physical form.

2. The process of claim 1 wherein the gelling of said polymeric carbohydrate gel precursor is by use of alkaline earth metal ions.

B 356,032

COFFEE EXTRACTION PROCESS

Saul N. Katz, 7 Dorchester Dr., Monsey, N.Y. 10952

Filed Apr. 30, 1973, Ser. No. 356,032

Int. Cl. A23f *1/08*

U.S. Cl. 426—434 **7 Claims**

Group Art Unit 177

References Cited

UNITED STATES PATENTS

2,340,758	2/1944	Kappenberg et al.	426/432
3,655,398	4/1972	Pitchon et al.	426/434

1. In a method for producing coffee extract wherein progressively fresher roasted and ground coffee is countercurrently contacted with an aqueous extraction liquid in the extraction columns of a percolator set and wherein said extraction liquid is fed to the spent stage extraction column containing the most extracted coffee and drawn off from the fresh stage extraction column containing the least extracted coffee, the improvement comprising feeding the entire portion of the aqueous extraction liquid fed to said spent stage extraction column at temperatures below about 120°F, and heating the exiting extraction liquid from said spent stage extraction column to above 300°F before contacting the next progressively fresher coffee.

B 363,337

PROCESS FOR DEHYDRATING FROZEN FOOD PARTICLES

Nils Tangsrud, and Ole Gabriel Devik, both of Trondheim, Norway, assignors to Sintef, Trondheim, Norway

Continuation of Ser. No. 782,760, Dec. 12, 1968, abandoned. This application May 24, 1973, Ser. No. 363,337

Int. Cl. A23b *1/04, 3/04*

U.S. Cl. 426—444 **3 Claims**

Group Art Unit 175

References Cited

UNITED STATES PATENTS

2,572,761	10/1951	Rivoche	99/199
2,572,762	10/1951	Rivoche	99/204
2,713,003	7/1955	Rivoche	426/385
2,959,487	11/1960	Nalter	99/204
3,063,848	11/1962	Van Geller	99/204
3,269,025	8/1966	Dryden	99/204

OTHER PUBLICATIONS

Food Dehydration II Products & Technology, VanArsdel (ed) Avi Publishing Co., Inc. Westport, Conn. 1964, pp. 76, 77.

1. In a process for preparing a dehydrated powder of a meat or fish product by carrying out in sequence the steps of freezing the product to be dehydrated, subdividing it into a powder of fibrous particles, distributing this powder on a carrier means and drying it by contacting it at atmospheric pressure with a gaseous drying agent having a temperature above the thawing point of the frozen powder and moving relative to the fibrous particles of the powder, the improvement wherein said powder is distributed as a layer on a porous carrier means through which said drying agent is passed with an even distribution and with a velocity of about 0.5 m/sec. which is sufficiently high to lift and maintain the powder layer in porous condition but sufficiently low so that said powder is not carried away by the flow of drying agent, said drying agent causing a thawing and drying of the fibrous particles which result in adhesion between the individual particles where they touch each other to form a firm porous mat having a thickness of about 15 mm, and after the formation of said porous mat the velocity of said drying agent is gradually increased up to about 5 m/sec. and the drying is continued at said increased velocity to bring the dry content thereof up to about 95 percent, after which said mat is torn up to a dehydrated powder.

B 281,943

METHOD OF COOKING FOOD IN A POLYETHYLENE TEREPHTHALATE/PAPERBOARD LAMINATED CONTAINER

William Paul Kane, Bon Air, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

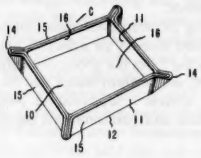
Filed Aug. 18, 1972, Ser. No. 281,943
Int. Cl. A21 *3/15*; B65d *5/24*
U.S. Cl. 426—523 2 Claims
Group Art Unit 177

References Cited

UNITED STATES PATENTS

2,495,807	1/1950	Buttery	229/34 A
3,178,017	4/1965	Bowman	206/45.34
3,531,041	9/1970	Ronde	229/31 FS

1. A method of cooking food including the steps of: providing a container formed from a blank formed from a laminate including paperboard having a layer of substantially amorphous polyethylene terephthalate extruded onto an uncoated surface thereof and wherein such surface is heated to a temperature of at least about 285°F. prior to such extrusion, said paperboad capable of being heated to a cooking temperature of up to about 400°F without browning, and said container being formed by folding the blank to bring surface portions of the amorphous polyethylene terephthalate layer thereof into abutting contact with other surface portions of such layer and by heat-sealing these abutting surface portions together;



placing food in said container in contact with said layer of polyethylene terephthalate; and

cooking the food in said container at a temperature of up to about 400°F.

B 456,346

POWER ISOLATED TRANSMISSION CABLE ASSEMBLY

Dale Richard Zell, Elizabethtown, and John Leroy Martin, Hummelstown, both of Pa., assignors to AMP Incorporated, Harrisburgh, Pa.

Filed Mar. 29, 1974, Ser. No. 456,346
Int. Cl. H01b *7/08*
U.S. Cl. 174—36 **9 Claims**
Group Art Unit 213

References Cited

UNITED STATES PATENTS

3,179,904	4/1965	Paulsen	174/117 F X
3,459,879	8/1969	Gerpheide	174/117 F X
3,576,941	5/1971	Colglazier	174/117 FF
3,612,744	10/1971	Thomas	174/117 FF X
3,703,604	11/1972	Henschen et al.	174/117 FF X
3,704,164	11/1972	Travis	174/117 FF X
3,728,661	4/1973	Kassabgi	174/117 F X
3,757,029	9/1973	Marshall	174/117 F X
3,763,306	10/1973	Marshall	174/117 F X
3,764,727	10/1973	Balde	174/117 FF X
3,818,117	6/1974	Reyner et al.	174/36

FOREIGN PATENTS OR APPLICATIONS

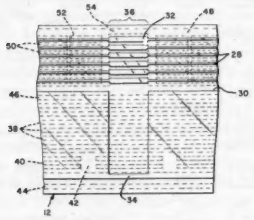
1,028,980	5/1966	Great Britain	174/117 FF

OTHER PUBLICATIONS

Angele, W., Flat Conductor Cable Manufacture and Installation Techniques, 15th Annual Wire & Cable Symposium 12–9–66.

Schuh, A. G. Flat Flexible Cable and Wiring–Types, Materials, Constructions and Features, Insulation/Circuits, Vol. 16, No. 11, pp. 27–34, Oct. 1970.

Flat Cable, The Modern Cable System for Electronic Applications, Tape Cable, Burnoy Corp. 10–28–69.



1. A matched impedance and isolated power circuit cable assembly comprising:

at least two flat flexible cables arranged in stacked configuration, each of said cables comprising a flat flexible insulating substrate, circuitry on both sides of said substrate, and insulation covering said circuitry;

one of said cables having a plurality of flat, parallel, spaced apart signal conductors lying in a single plane on a first side of said substrate and a plurality of interconnected flat shield conductors lying in a single plane on the other side of said substrate, said shield conductors extending parallel to said signal conductors and being laterally offset therefrom, said shield conductors having a width which is no greater than the spacing between said signal conductors whereby the edge portions of said shield conductors do not overlap edge portions of said signal conductors;

the other of said cables having on a first side of said substrate a plurality of flat, parallel, spaced apart signal conductors and a single flat, wide ground conductor both lying in a single plane, and on the other side of said substrate at least one power conductor of a first rating, at least one power conductor of a second rating, said power conductors aligned opposite and parallel to said single ground conductor, single flat isolating conductors lying in the same plane as and to each side of said power conductors, and a plurality of interconnected flat shield conductors lying in a single plane extending parallel to and laterally offset from said signal conductors;

sheating means enclosing said flexible cables;

terminal means attached to opposite ends of said cable assembly;

said cables being stacked with said first sides adjacent one another.

B 424,415

ELECTRICAL BOX MOUNTING ARRANGEMENT

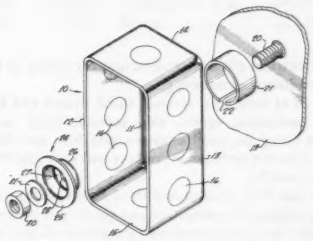
Frederick Perrault, 2644 W. 225th St., Torrance, Calif. 90505, and Raymond E. Perrault, 23441 Batey Ave., Harbor City, Calif. 90710

Filed Dec. 13, 1973, Ser. No. 424,415
Int. Cl. H02g *3/10*
U.S. Cl. 174—51 **11 Claims**
Group Art Unit 213

References Cited

UNITED STATES PATENTS

2,461,145	2/1949	Craver	220/3.9 X
2,512,188	6/1950	Wait	220/3.9 X
3,673,310	6/1972	Welsh	174/58



1. In combination with a support structure, an electrical box assembly comprising

a box adapted to receive electrical components,

said box having an inner wall and additional walls extending from said inner wall,

said inner wall having an opening therethrough,

a first threaded element,

a second threaded element,

said first threaded element being attached to said support structure,

a spacer adjacent said first threaded element,

one end of said spacer engaging said structure and the opposite end of said spacer engaging the outside surface of said inner wall of said box,

and a member having

a first portion engaging the inside surface of said inner wall,

and a second portion extending from said first portion through said opening in said inner wall,

said second portion having an opening therethrough receiving one of said threaded elements,

said second threaded element being meshed with said first threaded element and engaging said second portion of said member for exerting a force on said member to clamp said inner wall between said spacer and said first portion of said member, and to force said spacer against said structure for thereby securing said box to said structure.

B 437,450
COAXIAL CIRCUIT CONSTRUCTION AND METHOD OF MAKING

Robert B. Older, Woodland Hills, and Charles W. Smith, Canoga Park, both of Calif., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. No. 180,886, Sept. 15, 1971, abandoned, which is a division of Ser. No. 858,923, Sept. 18, 1969, Pat. No. 3,649,274. This application Jan. 28, 1974, Ser. No. 437,450

Int. Cl. H05k *1/02*

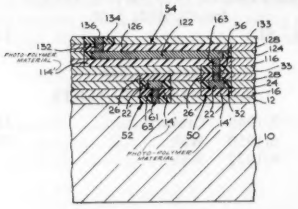
U.S. Cl. 174—68.5 **5 Claims**

Group Art Unit 213

References Cited

UNITED STATES PATENTS

3,366,519	1/1968	Pritchard, Jr. et al.	174/68.5 UX
3,391,454	7/1968	Reimann et al.	174/68.5 X
3,508,325	4/1970	Perry	317/101 A X



1. An electrical circuit construction providing at least one coaxial conductor comprising:

a stack of at least first, second, third, fourth and fifth adjacent contacting layers, said second, third and fourth layers being disposed between said first and fifth layers with adjacent surfaces in contact and with said third layer in the middle,

each of said first, second and third layers comprising separate portions of conductive and photo-polymer materials provided in a predetermined pattern with the outer surfaces of the conductive and photo-polymer material portions of each layer being of equal thickness and flush with one another,

said second and fourth layers having predetermined patterns such that each of said second and fourth layers comprises a conductive material portion surrounding a photo-polymer material path portion following a path corresponding to a predetermined path desired for said coaxial conductor and located so as to be oppositely disposed with respect to a like photo-polymer material path portion provided for the other of said second and fourth layers,

said third layer having a predetermined pattern such that said third layer comprises a conductive material portion surrounding a pair of spaced parallel photo-polymer material path portions likewise following said predetermined path and which in turn border and electrically isolate a conductive material path portion provided therebetween and constituting said coaxial conductor,

said spaced photo-polymer material path portions and said conductive material path therebetween provided in said third layer being disposed and dimensioned with respect to said photo-polymer path portions of said second and fourth layers so that said conductive material path portion of said third layer constituting said coaxial conductor is in contact with and completely encircled by photo-polymer material portions of said second, third and fourth layers, and

said first and fifth layers each providing conductive material overlapping said photo-polymer path portion on the respective one of said second and fourth layers to which it is adjacent and making contact with said surrounding conductive material path portion of said third layer constituting said coaxial conductor and encircling photo-polymer portions are in turn completely encircled by conductive material portions of said first, second, third, fourth and fifth layers,

said stack being additionally provided with sixth, seventh, eighth and ninth adjacent contacting layers constructed and arranged in a like manner as said second, third, fourth and fifth layers, respectively, and having predetermined patterns forming a second coaxial conductor in said seventh layer following a desired predetermined path.

B 364,163
TRANSMISSION SYSTEM FOR AUDIO AND CODING SIGNALS IN EDUCATIONAL TV

James W. H. Justice, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 364,163

Int. Cl. H04n *7/08*

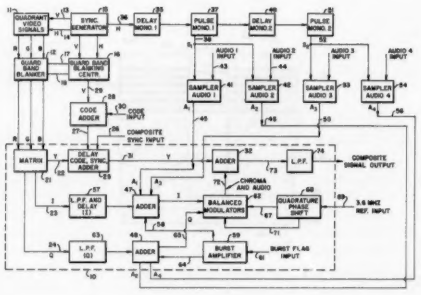
U.S. Cl. 178—5.6 **20 Claims**

Group Art Unit 233

References Cited

UNITED STATES PATENTS

2,268,001	12/1941	VonFelgel-Farnholz	178/5.6
3,256,386	6/1966	Morchand	178/DIG. 23



1. A transmitter apparatus for a plurality of input audio signals and video signals, all of which are modulated onto a subcarrier for transmission on a single TV carrier signal, the combination comprising:

means for generating a horizontal sync pulse between successive horizontal scan lines forming said video signals;

blanking means in the signal path of said video signals for defining a blanked guard-band interval at a time apart from a generated horizontal sync pulse;

means for sampling each input audio signal, and

means for amplitude modulating the sampling of said plurality of audio signals onto a subcarrier during said blanked guard-band interval apart from which interval said video signals are modulated onto the subcarrier during each horizontal picture scan line.

B 393,163

RECEIVER FOR A STILL PICTURE BROADCASTING SIGNAL

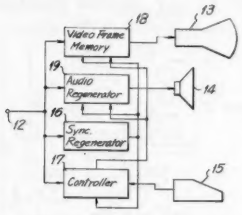
Teruhiro Takezawa; Michio Masuda, both of Tokyo; Hiroaki Nabeyama; Katsuo Mohri, both of Yokohama; Masaaki Fukuda, Tokyo; Tatsuo Kayano, Tokyo; Takashi Uehara, Tokyo; Eiichi Sawabe, Tokyo; Takehiko Yoshino, Yokohama; Hisakichi Yamane, Tokyo, and Akio Yanagimachi, Kawasaki, all of Japan, assignors to Hitachi Limited; Hitachi Electronics Ltd. and Nippon Hoso Kyokai, all of Tokyo, Japan

Filed Aug. 30, 1973, Ser. No. 393,163
Claims priority, application Japan, Sept. 4, 1972, 47-87958
Int. Cl. H04n *5/44*
U.S. Cl. 178—5.8 R **5 Claims**
Group Art Unit 233

References Cited

UNITED STATES PATENTS

3,493,674	2/1970	Houghton	178/5.6



1. A receiver for receiving a composite signal including a first information signal, a second information signal and a control signal having information for processing above said two signals in the receiver being transmitted sequentially in a predetermined sequence, wherein during transmission period of said second information signal the signals to be reproduced in the same period are inserted in the composite signal as real signals, and signals to be reproduced in the period when said second information signal is not transmitted are inserted in the composite signal as memory signals, and for reproducing said second information signal, the receiver comprises;

a means for generating a signal for identifying real or memory of said signal and for selectively deriving the same,

a gate means to be controlled by an output signal of said signal generating means,

a means for memorizing selectively gated out memory signal by said gate means,

a means for directly reproducing said selectively gated out real signal gated by the gate means simultaneously with the reception, and

a means for reading out said memory signal stored in the memory means during the period in which the second information signal is not transmitted and for reproducing the memory signal to form a continuous signal together with said reproduced real signal.

3. A receiver for reproducing audio signal from a composite signal comprising a video signal, a time division multiplex audio signal, a control signal including information for processing said two signals in the receiver, and synchronizing signals required for reproducing said signals, being transmitted in a predetermined time interval and in a predetermined sequence, during the transmission period of the audio signal the audio signal to be reproduced in the same period said audio signal is transmitted as a real signal, and the audio signal to be reproduced during a period in which the audio signal is not transmitted is transmitted as memory signal and transmitted together with the real signal in the composite signal, the receiver comprises;

a means for selecting said control signal,

a means for deriving out said audio signal by using the selected control signal by the selecting means,

a means for identifying real or memory of the derived out audio signal by said means,

a gate means for selectively switching the memory signal and the real signal in the derived out audio signal by using an output signal of said identifying means,

a means for memorizing said selected memory signal selected by the gate means,

a means for immediately reproducing the selected real signal selected by the gate means, and

a means for reading out the memorized memory signal in the memory means during the period in which the audio signal is not transmitted and reproducing the read out memory signal in continuous with the real signal.

B 309,755

CHARGE TRANSFER CIRCUITS

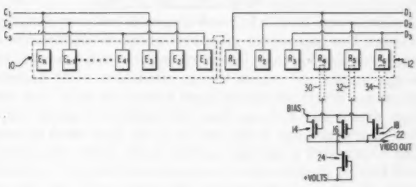
Paul Kessler Weimer, Princeton, N.J., assignor to RCA Corporation

Filed Nov. 27, 1972, Ser. No. 309,755
Int. Cl. H04n *3/14*
U.S. Cl. 178—7.1 **9 Claims**
Group Art Unit 233

References Cited

UNITED STATES PATENTS

3,597,731	8/1971	Reitboeck et al.	340/146.3 H
3,701,095	10/1972	Yamaguchi et al.	340/146.3 MA
3,746,883	7/1973	Kovac	307/221 D



1. A circuit for increasing the amplitude of signals produced in response to radiant energy excitation comprising, in combination;

a radiant energy sensing array including a plurality of locations, each defining one resolution element of the array, each location responsive to radiant energy excitation for producing a charge signal, and each location including means for storing its charge signal; and

means for combining the charge signal stored at groups of *n* adjacent locations, to provide a plurality of combined signals, fewer in number than the charge signals produced by the array, but each combined signal of greater amplitude than the individual ones of its constituent parts, where *n* is an integer greater than 1.

B 334,868

SENSOR PROVIDED WITH A PICK-UP PANEL

Wolfdietrich George Kasperkovitz, Emmasingel, Eindhoven, Netherlands

Filed Feb. 22, 1973, Ser. No. 334,868

Claims priority, application Netherlands, Mar. 4, 1972, 7202906

Int. Cl. H04n 5/30

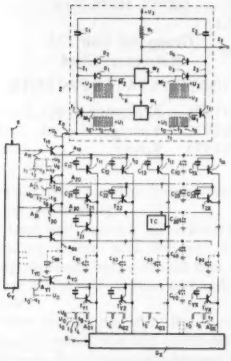
U.S. Cl. 178—7.1 9 Claims

Group Art Unit 233

References Cited

UNITED STATES PATENTS

3,562,418	2/1971	Glusick	178/7.1
3,660,667	5/1972	Weimer	250/211 J



1. A sensor provided with a pick-up panel formed with a cross-bar system of row and column conductors and pick-up elements occurring between intersections, said conductors being connected to outputs of row and column scanning generators each applying successive pulses with a reference voltage to the outputs, said panel being connected to an output circuit for applying an output signal to an output of the sensor through a row and column selection, a plurality of row selection transistors having bases, collectors and emitters, the outputs of the row scanning generator being separately connected to the bases of said row selection transistors, the emitter of each row selection transistor being connected to a separate row conductor, each output of the row scanning generator thereby being connected to a correspnding row through the base and emitter of a corresponding row selection transistor, means for interconnecting the collectors of said row selection transistors and for connecting said interconnected collectors to the output circuit, said row scanning generator providing each row selection transistor base with a D.C. bias during the scanning of a corresponding row.

B 357,803

ASYMMETRIC APERTURE CORRECTOR FOR A TELEVISION IMAGE SIGNAL

Hendrik Blom, and Prudent Eduardus Jacobus Mollet, both of Emmasingel, Eindhoven, Netherlands

Filed May 7, 1973, Ser. No. 357,803

Claims priority, application Netherlands, June 10, 1972, 7207934

Int. Cl. H04n 5/14

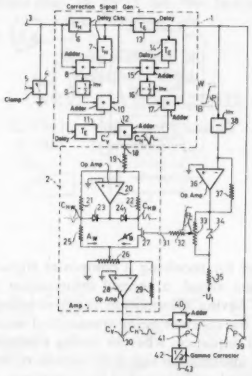
U.S. Cl. 178—7.1 8 Claims

Group Art Unit 233

References Cited

UNITED STATES PATENTS

3,011,018	11/1961	Sullivan	178/DIG. 25
3,743,770	7/1973	Vidovic	178/DIG. 25
3,783,190	1/1974	Gaebele	178/DIG. 25



1. An aperture corrector for a television image signal, which corrector is provided with at least a delay circuit and a signal combination circuit for deriving from the image signal varying between a black level and a peak-white value an aperture correction signal having a negative and a positive going signal value relative to a reference value, characterized in that the corrector is provided with a signal amplifier having different amplification factors for the said positive and negative signal values in the aperture correction signal to be applied to an input, so that the corrector has an output for applying an asymmetric aperture correction signal built up of a relatively attenuated correction signal which is derived from the image signal value located nearer the black level and a relatively amplified correction signal which is derived from the image signal value located nearer the peak-white value.

8. A method for aperture correcting a television signal varying between black and white levels, said method comprising deriving from said signal a symmetric aperture correction signal having positive and negative going component signals, reducing black area extension by deriving from said symmetric aperture correction signal an asymmetric aperture correction signal having a large correction signal near said white level and a relatively small correction signal near said black level, and applying said asymmetric correction signal to said television signal.

B 309,860

FLYING SPOT SCANNER WITH SCAN DETECTION

Gary K. Starkweather, Saratoga, and Robert P. Kowalski, Campbell, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 27, 1972, Ser. No. 309,860
Int. Cl. H04n 1/22
U.S. Cl. 178—7.6 18 Claims
Group Art Unit 233

References Cited

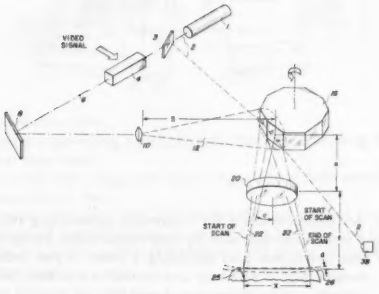
UNITED STATES PATENTS

3,111,556	11/1963	Knoll et al.	178/7.7
3,574,469	4/1971	Emerson	356/200
3,646,568	2/1972	Woywood	346/108

OTHER PUBLICATIONS

Brown, et al., "Otpical Deflector for Nonimpact Printing," p. 643, IBM Technical Disclosure Bulletin, Vol. 13, No. 3, Aug. 1970.

Latta, "Laser Raster Scanning," pp. 3879–3880, IBM Technical Disclosure Bulletin, Vol. 13, No. 12, May 1971.



1. Apparatus for recording information from an electrical signal onto a scanned medium comprising:

means for providing a beam of high intensity light,

means for modulating the light beam in accordance with the transmission of information represented by an electrical signal,

first optical means for expanding said modulated beam,

second optical means in convolution with said first optical means for imaging said expanded, modulated beam to a spot in a focal plane coextensive with the surface of a light sensitive medium at a predetermined distance from said second optical means,

scanning means positioned between said first and second means for scanning the spot across said medium, said scanning means having a reflective element, a portion of which is illuminated by said modulated beam to direct said spot to said medium,

means positioned between said light beam providing means and said modulating means for splitting the unmodulated beam such that an unmodulated beam is directed at the illuminated portion of said scanning means,

said scanning means further scanning a spot of unmodulated light throughout a scan width unassociated with said medium, and

means for detecting and indicating the start of the scan of said spot of unmodulated light.

B 335,741

MULTI-CHANNEL SOUND SIGNAL GENERATING AND REPRODUCING CIRCUITS

Yasuaki Nakano, 5-22-9, Nishihirayama, Hino-shi, Japan

Filed Feb. 26, 1973, Ser. No. 335,741
Claims priority, application Japan, Feb. 25, 1972, 47-18949
Int. Cl. H04r 5/00
U.S. Cl. 179—1 GQ 8 Claims
Group Art Unit 232

References Cited

UNITED STATES PATENTS

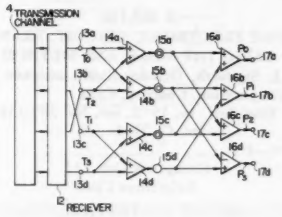
3,632,886	1/1972	Scheiber	179/1 GQ
3,745,252	7/1973	Bauer	179/1 GQ
3,746,792	7/1973	Scheiber	179/1 GQ

OTHER PUBLICATIONS

Analysing Phase – Amplitude Matrices, by Scheiber, AES Preprint, Oct. 1971.

Multichannel Stereo Matrix Systems: An Overview by Eargle Journal AES, July/August 1971.

Discrete–Matrix Multichannel Stereo, by Cooper & Shiga, Journal AES, June 1972, presented 10/7/71.



1. A matrix circuit comprising first, second, third, and fourth input terminals; first arithmetic circuit means for adding signals provided from said first and second input terminals; second arithmetic circuit means for subtracting said signal of said second input terminal from said signal of said first input terminal; third arithmetic circuit means for adding signals from said third and fourth input terminals; fourth arithmetic circuit means for subtracting said signal of said fourth input terminal from said signal of said third input terminal; first, second, and third phase shifters having a first phase shift which are respectively connected to the outputs of said first, second, and third arithmetic circuit means; a fourth phase shifter having a second phase shift connected to the output of said fourth arithmetic circuit means, fifth arithmetic circuit means for adding the outputs of said first and third phase shifters; sixth arithmetic circuit means for subtracting the output of said fourth phase shifter from the output of said second phase shifter; seventh arithmetic circuit means for subtracting said output of said third phase shifter from said output of said first phase shifter; eighth arithmetic circuit means for subtracting said output of said second phase shifter from said output of said fourth phase shifter; and first, second, third, and fourth output terminals which are respectively connected to said fifth, sixth, seventh, and eighth arithmetic circuit means; the phase difference between said first and second phase shifts being 90°.

6. Multi-channel sound system having a first matrix circuit for encoding a four directional input signal obtained from four signal sources arranged in such manner that their azimuths on a plane are spaced by approximately 90°, a plurality of transmission channels for transmitting the output signals of the signals of the first matrix circuit and a second matrix circuit for decoding the transmitted signal and reproducing directional output sound signals correlated with the input signals,

wherein said matrix circuit includes first, second, third, and fourth input terminals; first, second, third, and fourth phase shifters having a first phase shift which are respectively connected to said first, second, third, and fourth input terminals; first arithmetic circuit means for subtracting a signal of said fourth input terminal from a signal of said third input terminal; a fifth phase shifter having a phase shift connected to the output of said first arithmetic circuit means; second arithmetic circuit means for producing a sum among outputs of said first, second, third, and fourth phase shifters; third arithmetic circuit means for subtracting said output of said second phase shifter from a sum between said output of said first phase shifter and an output of said fifth phase shifter; fourth arithmetic circuit means for subtracting said outputs of said third and fourth phase shifters from a sum between said outputs of said first and second phase shifters; and fifth arithmetic circuit means for subtracting said output of said second phase shifter and said output of said fifth phase shifter from said output of said first phase shifter; the phase difference between said first and second phase shifts being 90°;and first, second, third, and fourth output terminals respectively connected to said second, third, fourth, and fifth arithmetic circuit means.

B 307,110

LOW NOISE ELECTRONIC CIRCUIT, TRANSDUCER USING THE SAME, AND METHOD

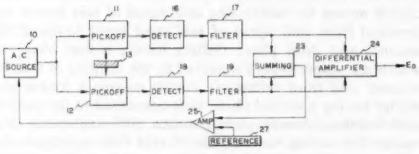
Frederick J. Sigworth, Orinda, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Filed Nov. 16, 1972, Ser. No. 307,110
Int. Cl. H04r *3/00*
U.S. Cl. 179—1 P **10 Claims**
Group Art Unit 232

References Cited

UNITED STATES PATENTS

2,979,670	4/1961	Unger	331/65
3,109,145	10/1963	Morris et al.	328/1
3,151,487	10/1964	Schuck	340/262
3,524,177	8/1970	Ohno	340/186



7. The method of providing a low noise electronics circuit for use with transducers, comprising the steps of generating an AC excitation signal, exciting a pickoff in each of two separate signal channels by directly connecting the pickoffs to the AC signal, tuning each of said pickoffs to increase said AC excitation signal limited only by the power dissipation capability of said pickoffs, moving a conductive element between said pickoffs to produce an output signal in each of said signal channels, detecting said output signals, cancelling internally and externally generated noise from said AC excitation generator appearing as common mode signals at the output of said two separate signal channels, and adding electrical output from said pickoffs appearing as differential mode signals at the output of said two separate signal channels.

B 349,321

INTERCONNECTOR FOR TELEPHONE UNITS

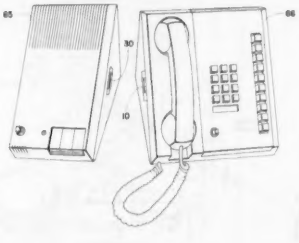
Ronald Joseph Morrell; Graham Sterling Laing, and Charles Gordon McEwan, all of London, Ontario, Canada, assignors to Northern Electric Company, Ltd., Montreal, Quebec, Canada

Filed Apr. 9, 1973, Ser. No. 349,321
Int. Cl. H04m *1/00*
U.S. Cl. 179—1 PC **2 Claims**
Group Art Unit 232

References Cited

UNITED STATES PATENTS

2,771,559	11/1956	Montmeat	325/355
3,054,024	9/1962	Van Dillen et al.	325/355
3,120,987	2/1964	Degnan et al.	339/75 M
3,425,025	1/1969	Williams	339/75 M
3,605,070	9/1971	Krafthefer	339/91 R
3,651,446	3/1972	Sadogierski et al.	339/91 R



1. An interconnector for removably connecting two telephone sets in intimate side-by-side relationship, comprising:

a first connector part including a base, a rim extending peripherally of said base and normal to said base, a flange extending outwardly around said rim, an interior surface on said base, an aperture in said base, and a first electrical connector mounted in said aperture;

a first telephone housing having an aperture in a side surface thereof, said aperture opening to a peripheral edge of said housing, and a channel formation on the periphery of said aperture, said flange on said first connector sliding into said channel formation to retain said first connector in said first housing;

a second connector part including a central web, a first rim extending peripherally of said web and normal to said web, a second rim extending peripherally of said web and normal thereto in a direction opposite to that of said first rim, a flange extending peripherally of said first rim and outwardly therefrom, an exterior surface on said second rim, an aperture in said central web, and a second electrical connector mounted in said aperture, said second connector adapted to cooperate with said first connector for electrical connection therewith;

a second telephone housing having an aperture in a side surface thereof, said aperture opening to a peripheral edge of said housing, and a channel formation on the periphery of said aperture, said flange on said second connector sliding into said channel formation to retain the second connector in said second housing;

interengaging formations on each of said connector parts, said formations comprising recesses formed in one of said interior surface on said base of said first connector and said exterior surface of said second rim of said second connector and cooperative protrusions on the other of said interior and exterior surfaces, said formations interengaging to retain said first and second connector parts

together and to retain said first and second telephone housings in side-by-side relationship.

B 295,674

DIGITAL SYSTEM FOR RECLOCKING PULSE CODE MODULATION CIRCUITS

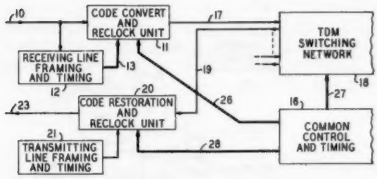
Henry Stanton McDonald, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 6, 1972, Ser. No. 295,674
Int. Cl. H04l *3/00*
U.S. Cl. 179—15 AP **14 Claims**
Group Art Unit 232

References Cited

UNITED STATES PATENTS

3,707,680	12/1972	Gabbard	325/38 B
3,707,712	12/1972	Deschenes	179/15 AP
3,750,144	7/1973	Bolus	340/347 DD



1. In combination,

means for providing digital signals encoded according to a first time base,

means for converting said digital signals to a delta modulation format, and

means for encoding said delta modulation signals in a predetermined coded format according to a second time base which is independent, in frequency and phase, of said first time base.

B 327,612

METHOD OF TRANSFER OF SWITCHING ORDER INFORMATION FOR TRANSMISSION OF PCM WORDS

Nils Herbert Edström, Stockholm; Stig Gustaf Wilhelm Lindqvist, Enskede, and Gunnar Erik William Sparrendahl, Handen, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

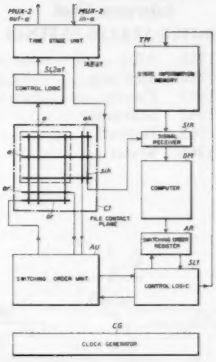
Filed Jan. 22, 1973, Ser. No. 327,612
Claims priority, application Sweden, Feb. 8, 1972, 1445/72
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 AT **3 Claims**
Group Art Unit 237

References Cited

UNITED STATES PATENTS

3,581,016	5/1971	Martinelli	179/15 AT
3,649,763	3/1972	Thompson	179/15 AQ
3,694,580	9/1972	Inose et al.	179/15 AT
3,700,819	10/1972	Marcus	179/18 GF
3,736,381	5/1973	Johnson et al.	179/15 AT
3,740,484	6/1973	Laggy et al.	179/18 J

1. In a multichannel time division multiplex system for handling PCM words which has incoming and outgoing links connected to an exchange comprising a first time stage, a space stage and a second time stage wherein during time slots of frames indicated by time slot numbers the PCM words are transferred from the first time stage via the space stage to the second time stage wherein the space stage is divided into a number of file contact planes, each of which has an incoming transfer file connected to an associated switching order unit having register means, and has incoming and outgoing files connected to associated respective substages in the first and second time stage, respectively, and wherein each substage is connected to links associated with the respective substage among the incoming and outgoing links to and from the exchange, so that the number of file contact planes corresponds to the number of outgoing and incoming files from and to any one of the substages in the first and second time stage, a substage in the first time stage and a substage in the second time stage forming part of a common time substage, each furthermore including switching order memories which, for receiving of switching order information, are connected to the



respective files outgoing from the file contact planes, the method of transferring switching order information from the switching order units to the switching order memories wherein the switching order information includes in the case when a communication path is to be connected between an incoming channel on an incoming link and an outgoing channel on an outgoing link, a slot number which indicates the time slot allotted to such path, and time substage addresses and channel indices which together indicate the channels, and including, in the case the path is to be disconnected, the substage address indicating the incoming link and the slot number which have been used during the connection, and instead of the channel indices and the substage address indicating the outgoing link, used during the connection, such indices and such an address which cannot be used for any connection, the method comprising the steps of:

selecting definite time slots during which only switching order information, and not PCM words, is transferred on the files outgoing from the file contact planes,

dividing each of said definite time slots into two portions,

storing the switching order information in the register means of one of the switching order units,

transferring from the respective register means to the transfer file of the switching order unit, said slot number in each of the first portions of said definite time slots, and reading from the respective register means the substage address indicating the outgoing link and the channel indices in their respective second portions of said definite time slots,

decoding the substage address indicating the incoming link during the time slots in which the substage address indicating the outgoing link and the index indicating the outgoing link and the index indicating the incoming channel are read,

further decoding the substage address indicating the outgoing link during the time slot in which the index indicating

the outgoing channel is read,

and connecting during said decoding and during said further decoding in the file contact plane the transfer file to the file outgoing to the time substage the address of which is being decoded.

B 361,569

COMMUNICATION SYSTEM EMPLOYING SPECTRUM FOLDING

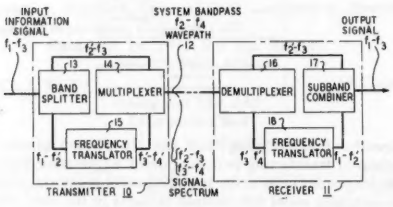
Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 18, 1973, Ser. No. 361,569
Int. Cl. H04b *1/66*
U.S. Cl. 179—15.55 R **7 Claims**
Group Art Unit 232

References Cited

UNITED STATES PATENTS

1,773,126	8/1930	Affel	179/15.55 R
1,948,973	2/1934	Steinberg	179/15.55 R
2,014,081	9/1935	Cserely	179/15 BW
3,030,450	4/1962	Schroeder	179/15.55 R
3,069,506	12/1962	Hopner	179/15.55 R
3,246,084	4/1966	Kryter	179/15.55 R



1. In a communication system including a transmitter, a receiver, and a wavepath connecting said transmitter to said receiver:

means for transmitting and receiving an input signal having a frequency spectrum f_1–f_3 which only partially overlaps the passband f_2–f_4 of said system, and which is less than said passband;

said means comprising at said transmitter:

a bandsplitter for dividing said signal into two subbands f_1–f'_2 and f'_2–f_3, where the first of said subbands includes that portion of the signal spectrum that falls outside said passband, and where the second of said subbands falls wholly within said passband;

a frequency translator for shifting the frequencies of said first subband to a region f'_3–f'_4 of said passband not occupied by said second subband;

and a multiplexer for combining said second subband f'_2–f_3 and said frequency-shifted first subband f'_3–f'_4 for transmission along said wavepath;

and where said means comprises at said receiver:

a demultiplexer for separating said second subband f'_2–f_3 and said frequency-shifted first subband f'_3–f'_4;

a second frequency translator for shifting the frequencies of said frequency-shifted subband f'_3–f'_4 back to f_1–f'_2; and means for recombining said first and said second subbands f_1–f'_2 and f'_2–f_3 to reform said input signal spectrum f_1–f_3.

B 349,948

MULTIFREQUENCY TONE DETECTING ARRANGEMENT

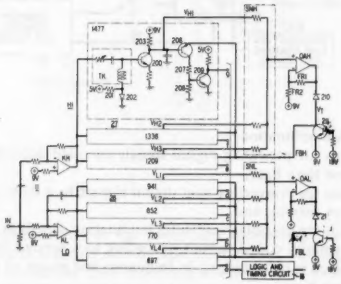
John Francis O'Neill, Boulder, Colo., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Apr. 11, 1973, Ser. No. 349,948
Int. Cl. H04m *1/50;* **H04q** *9/12*
U.S. Cl. 179—84 VF **12 Claims**
Group Art Unit 232

References Cited

UNITED STATES PATENTS

3,140,357	7/1964	Bischof et al.	179/84 VF
3,582,565	6/1971	Beeman et al.	179/84 VF
3,780,230	12/1973	Bowen et al.	179/84 VF
3,795,775	3/1974	Coupland	179/84 VF



8. An arrangement for detecting one of a plurality of permissible discrete tone signals, and for discriminating against the detection of any other tone in a predetermined band of frequencies comprising

a respective circuit for resonating in response to the occurrence of each said discrete signal frequency,

a circuit for sampling the output of each said resonating circuits to develop a control signal which is the sum of the amplitudes of the signal presented by each said resonating circuit,

utilization circuit means,

a respective threshold sensitive device connected between each said resonating circuit and said utilization device, and

means for delivering said control signal from said sampling circuit to each said threshold sensitive device for establishing the minimum signal which must be present at any said resonating circuit output to be coupled to said utilization circuit means.

B 351,598

VELOCITY CORRECTION SYSTEM WITH DAMPING

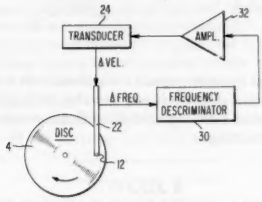
Michael Evans Miller, and John Gordon Amery, both of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

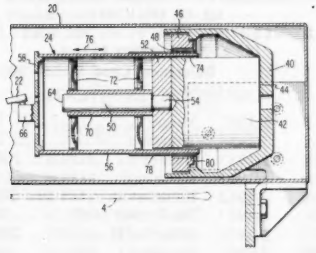
Filed Apr. 16, 1973, Ser. No. 351,598
Int. Cl. G11b *3/10, 25/04*
U.S. Cl. 179—100.4 E **15 Claims**
Group Art Unit 235

References Cited

UNITED STATES PATENTS

3,176,170	3/1965	Fulton et al.	310/12
3,349,304	10/1967	Wachter	310/12
3,521,092	7/1970	Kalthoff	310/13
3,711,641	1/1973	Palmer	179/100.2 K





2. In a velocity adjusting system for opposing undesired cyclical variations in the relative velocity between a moving record medium and a pickup means which is positioned adjacent to said record medium for detecting signals recorded on said record medium, said system including means for developing a correction signal in response to cyclical variations of said relative velocity falling in a given error frequency range, apparatus coupled to said pickup means and responsive to said correction signal to vary the physical position of said pickup means with respect to said record medium, comprising:

transducer means having a stationary portion which includes a magnet and an arm secured thereto, said transducer means further including an elongated movable portion disposed in spaced relation with said stationary portion;

resilient means intercoupling said arm of said stationary portion and said movable portion, said resilient means being disposed so as to urge said movable portion to return to a null position with respect to said stationary portion when motion of said movable portion causes displacement from such null position;

an electrical winding disposed on said movable portion adjacent to said magnet such that said correction signal passing through said winding imparts motion to said movable portion along said arm to vary the position of said pickup means in a manner that opposes said cyclical variations of said relative velocity; and

electrical damping means, connected to said moveable means and adjacent to said magnet, for opposing any relative movement of said movable portion with respect to said stationary portion.

B 365,841

ELECTROMAGNETIC SOUND PICK-UP

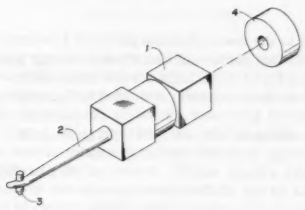
Hans-Robert Kuhn, Kiel, Germany, assignor to Electroacustic GmbH KIEL, Kiel, Germany

Filed June 1, 1973, Ser. No. 365,841
Claims priority, application Germany, July 20, 1972, 2235484
Int. Cl. H04r *11/12*
U.S. Cl. 179—100.41 K **2 Claims**
Group Art Unit 235

References Cited

UNITED STATES PATENTS

3,463,889	8/1969	Ahrens	179/100.41 K
3,576,955	5/1971	Obata	179/100.41 K
3,763,335	10/1973	Morita	179/100.41 K



1. An electromagnetic sound pick-up armature for reproduction of stereo sound signals having 90° phase shift between individual channels comprising an armature secured to a needle carrier, said armature being elastically deflectable with uniform stiffness in all deflection directions, the cross section of the armature being cylindrical in the region of its mounting and quadrilateral in the part of its length, which is adapted to be inserted between the ends of two pole shoes of a magnetic pick-up.

B 354,145

HEARING AID

Kenji Nakamura, Chigasaki; Kunihiko Fukuyama, and Takuo Yamamoto, both of Tokyo, all of Japan, assignors to Rion Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 24, 1973, Ser. No. 354,145
Claims priority, application Japan, Oct. 16, 1972, 47-103466
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 FD **8 Claims**
Group Art Unit 232

References Cited

UNITED STATES PATENTS

2,112,569	3/1938	Lybarger	179/107 FD
3,385,937	5/1968	Lafon	179/107 R
3,764,745	10/1973	Bottcher	179/107 FD
3,784,750	1/1974	Stearns	179/107 FD

1. A hearing aid device comprising in combination, a pair of microphones each picking up acoustic energy to convert it to a corresponding electrical energy, a control generator circuit connected to one of the microphones to generate a control voltage in response to that portion of the electric energy generated by said one microphone having a predetermined frequency spectrum, a first control circuit connected to

both the other microphone and to the control generator circuit to decrease the lower frequency portions of the electrical energy from the other microphone in response to the control voltage from the control generator circuit, and a second control circuit connected to the first control circuit and also to the control generator circuit to decrease the higher frequency portion of the electrical energy from the other microphone in response to the control voltage from the control generator circuit, whereby acoustic energy reconverted from the electrical energy has a frequency characteristic suitable for the auditory characteristic of a person having difficulty in hearing.

5. A hearing aid device comprising in combination, a single microphone for picking up acoustic energy to convert it to a corresponding electric energy, a control generator circuit

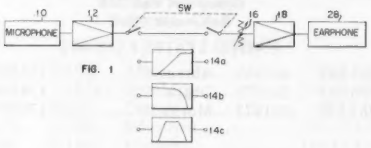


FIG. 1

connected to the microphone to generate a control voltage in response to that portion of the electric energy generated by said one microphone having a predetermined frequency spectrum, a first control circuit connected to the microphone and to the control generator circuit to decrease the lower frequency portions of the electric energy in response to the control voltage from the control generator circuit, and a second control circuit serially connected to the first control circuit and to the control generator circuit to decrease the higher frequency portions of the electric energy in response to the control voltage from the control generator circuit, whereby acoustic energy reconverted from the electric energy has a frequency characteristic suitable for the auditory characteristic of a person having difficulty in hearing.

B 355,269

APPARATUS AND METHOD FOR TRACING JUMPERS IN A MAIN DISTRIBUTING FRAME

Courtney Harold Schardt, Millington, and Albert James Schepis, Parsippany, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 205,801, Dec. 8, 1971, abandoned. This application Apr. 27, 1973, Ser. No. 355,269

Int. Cl. H04b *3/46*

U.S. Cl. 179—175.3 A **16 Claims**

Group Art Unit 232

References Cited

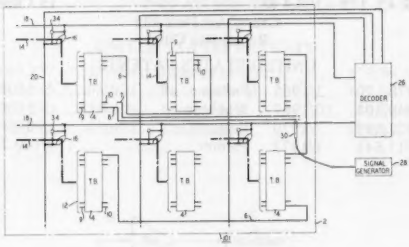
UNITED STATES PATENTS

2,789,268	4/1957	Bechtel et al.	324/66
2,869,077	1/1959	Houk	179/175.3 A
3,288,943	11/1966	Bohnenblust	179/175.3 A
3,476,888	11/1969	Rollins et al.	179/175.25
3,535,692	10/1970	Papke	340/166 R
3,644,687	2/1972	Richards	179/175.3 A

14. In a wiring frame having a plurality of terminal blocks, conductors adapted for interconnecting said terminal blocks, a plurality of cables which are mounted to respective ones of said terminal blocks and connected to said conductors therethrough, and magnetic cores about respective ones of said cables, the method of locating the ends of said conductors comprising the steps of:

interconnecting said cores with a matrix of address wires so that the location of each core is defined by a crosspoint of said matrix;

placing an identification signal on one of said conductors so that said signal is transmitted to any one of said terminal blocks to which said conductors is connected and thereby to said cable associated therewith, said core about said cable being responsive to said identification signal to change the magnetic field thereof and produce location signals on said address wires interconnected therewith; and



detecting said location signals on said address wires so that the location of said cores and thereby the location of said terminal blocks having said identification signal thereon can be determined.

B 323,191

TURN SIGNAL AND HAZARD WARNING SWITCH

John E. Wendling, Fort Wayne, Ind., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 12, 1973, Ser. No. 323,191

Int. Cl. H01h *3/16*

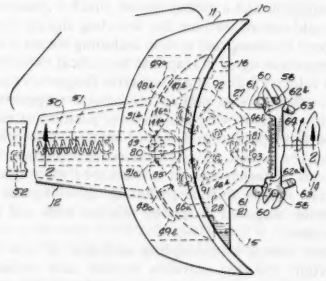
U.S. Cl. 200—61.27 **12 Claims**

Group Art Unit 217

References Cited

UNITED STATES PATENTS

2,276,413	3/1942	Moore	200/61.34
2,678,358	5/1954	Thomson	200/61.35
2,817,728	12/1957	Gurney	200/61.27 X
3,029,320	4/1962	Laete	200/16 C
3,030,459	4/1962	Elliott et al.	200/16 C X
3,300,601	1/1967	Du Rocher et al.	200/61.34
3,510,839	5/1970	Elliott et al.	200/61.27 X
3,604,867	9/1971	Suzuki	200/61.34



1. In a turn signal and hazard warning electrical switch device for use in a vehicle having a stationary steering column and a steering wheel rotatably mounted on the steering column, the combination comprising:

a switch casing secured to said steering column;

means defining a cavity extending through said casing for receiving one end of a switch actuating lever therein;

a switch actuating lever extending into said cavity means and having an end portion disposed within said casing;

means pivotally mounting said actuating lever in said cavity means, said actuating lever being pivotal between first and second positions corresponding to left and right turn signal indicating positions, respectively;

spring means interconnecting said actuating lever and said casing for yieldably urging said actuating lever to a neutral position intermediate said first and second positions;

elongated cross bar means rigidly connected to said end portion of said actuating lever disposed within said casing, said cross bar means extending parallel to the plane of pivotal movement of said lever;

a pair of pawl members, each of said pawl members being pivotally mounted in a respective end of said cross bar means;

interengageable means on said casing and said pawl members to selectively hold said actuating lever in either one of said left and right turn signal indicating positions;

turn signal cancelling means carried by and movable in unison with the vehicle steering wheel;

means on said pawl members engageable by said turn signal cancelling means upon rotation of the vehicle steering wheel and when said actuating lever is in a left or right turn signal indicating position to release the actuating lever from such turn signal position and allow automatic return of the lever to said neutral position by said spring means.

B 433,587

LIQUID MOTION ANTI-DISTURBANCE SWITCH

Richard E. Reinnagel, Elma, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 15, 1974, Ser. No. 433,587
Int. Cl. H01h *35/14, 29/00*
U.S. Cl. 200—61.47 **6 Claims**
Group Art Unit 217

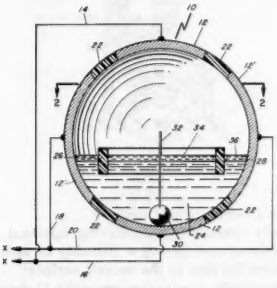
References Cited

UNITED STATES PATENTS

1,666,122	4/1928	Denniston	200/61.47
2,172,423	9/1939	Wangemann	200/193
2,265,681	12/1941	Bear et al.	200/226
2,849,500	8/1958	Olmer et al.	200/224 X
3,240,900	3/1966	Halff et al.	200/183 X
3,259,900	7/1966	Lord	200/61.47 X
3,304,651	2/1967	Deyerl	200/61.47 X
2,774,926	12/1956	Gilman	200/18 X
2,841,659	7/1958	Eitel	200/5 R
2,953,731	9/1960	Robbins	200/6 BB X
3,250,350	5/1966	Shimanckas	74/876
3,309,938	3/1967	Pervier	74/876
3,493,707	2/1970	Castle	200/153 T X
3,497,643	2/1970	Heath	200/153 LB X

FOREIGN PATENTS OR APPLICATIONS

1,052,432	12/1966	Great Britain	200/153 LB



1. A liquid motion anti-disturbance switch which comprises:

a hollow housing having a first and a second set of terminals electrically insulated from each other;

a nonconducting fluid partially filling said housing;

floating pole means deposed upon said nonconducting fluid and electrically connected to said sets of terminals, said pole means maintaining said set of terminals in an open disconnected position when said switch is at a rest position, and closing said switch when said switch is subjected to motion which includes;

a conducting film ring floating on said nonconducting fluid for making electrical contact with at least one of the said first set of terminals;

a conducting film disc floating on said nonconducting fluid being electrically insulated from said film ring when said switch is at a rest position;

contact means slidably disposed within said housing for contacting at least one of said second set of terminals and electrically connecting said film disc to said second set of terminals; and

an insulating toroid disposed within said housing having a density lower than said nonconducting fluid whereby said toroid floats on said nonconducting fluid, and mechanically and electrically separates said conducting film ring from said conducting film disc when said switch is in said rest position, said toroid effecting closure of said switch when said switch is tilted or given sufficient motion to cause said toroid means to dip in said nonconducting fluid, thereby allowing said conducting film ring and film disc to flow together causing switch closure.

B 364,528

ELECTRICALLY CONTROLLED SHIFT MECHANISM FOR MARINE PROPULSION UNITS

Russell J. Barnes, Oakfield, Wis., assignor to Brunswick Corporation, Sokokie, Ill.

Filed May 29, 1973, Ser. No. 364,528
Int. Cl. H01h *3/42*
U.S. Cl. 200—61.88 **14 Claims**
Group Art Unit 217

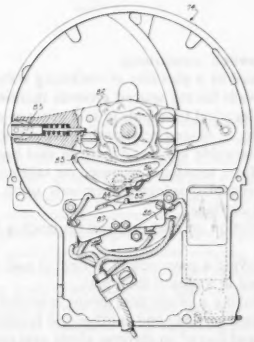
References Cited

UNITED STATES PATENTS

2,774,926	12/1956	Gilman	200/18 X
2,841,659	7/1958	Eitel	200/5 R
2,953,731	9/1960	Robbins	200/6 BB X
3,250,350	5/1966	Shimanckas	74/876
3,309,938	3/1967	Pervier	74/876
3,493,707	2/1970	Castle	200/153 T X
3,497,643	2/1970	Heath	200/153 LB X

FOREIGN PATENTS OR APPLICATIONS

1,052,432	12/1966	Great Britain	200/153 LB



1. In marine propulsion drive apparatus having a forward drive means and a reverse drive means controlled by an electrical control means having three inputs and operable to move to three corresponding shift positions including a neutral position, a forward drive position and a reverse drive position comprising a power supply means, a first shift switch means having a power input means connected to the power supply

means with a snap action construction movable between first and second output means, a second shift switch means having a power input means connected to said first output means and having a snap action construction movable between third and fourth output means, circuit means connecting said second, third and fourth outputs one each to each of said three inputs of said control means to produce a neutral output, a forward drive output and a reverse drive output, and a manual control unit movable between a neutral position, a forward position and a reverse position and coupled to the shift switch means to selectively and sequentially actuate said switch means to energize only one of said second, third or fourth outputs and establish the corresponding drive position.

B 376,504

ALTERNATE MAKE AND BREAK TYPE OPERATING MEANS FOR PUSHBUTTON SWITCH ASSEMBLIES

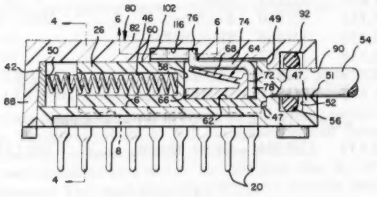
Joseph Larue Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 5, 1973, Ser. No. 376,504
Int. Cl. H01h *13/56*
U.S. Cl. 200—153 J **4 Claims**
Group Art Unit 217

References Cited

UNITED STATES PATENTS

1,815,577	7/1931	Nenzel	200/16 D
3,287,513	11/1966	McFarland	200/16 C
3,437,775	4/1969	Piber	200/153 J UX
3,482,064	12/1969	Osika	200/16 D
3,500,002	3/1970	Bedocs	200/16 C
3,624,328	11/1971	Hansen	200/153 J
3,629,526	12/1971	Lewis	200/153 J X
3,673,365	6/1972	Schadow	200/16 D X
3,689,724	9/1972	Labude et al.	200/333 X
3,732,386	5/1973	Ohkita	200/153 J



1. A bi-stable switch, comprising:
a housing defined by a plurality of enclosing walls,
a pair of said walls having spaced grooves therein,
a plurality of electrical terminals in said grooves and maintained thereby in spaced relationship in said housing,
a carriage displaceable back and forth in said housing,
a pair of strip form terminals mounted on said carriage for electrically engaging selected terminals upon displacement of said carriage,
an extension portion on said carriage protruding from said housing,
said housing having a passageway in one of said enclosing walls arranged in a closed loop path,
said carriage having a projection having one end received rotatably in said carriage and another end received in said passageway and forced to traverse along said passageway as said carriage is displaceable back and forth in said housing,
said passageway having two spaced detent portions,
said projection second end initially in seating engagement in a first detent portion,
a spring in resilient compression between said carriage and said housing and being resiliently compressible and expansible in response to traverse of said carriage back and forth in said housing,
said carriage being displaceable in a first direction to traverse said projection second end along said passageway out of seating engagement in said first detent portion,
said carriage subsequently being displaceable in a second direction to traverse said projection second end along said passageway into engagement in a second detent portion of said passageway, and
means on said carriage continuously and resiliently urging said projections to project said second end thereof into said passageway.

2. The structure as recited in claim 1, wherein,
said passageway includes a bottom surface formed with a series of inclined ramps, with a shoulder defined between each adjacent pair of ramps,
said projection second end being forced to traverse along said passageway in one direction as said carriage is displaced back and forth in said housing,
said projection second end upon traverse along said passageway in a direction opposite to said one direction being stopped against one of said shoulders, which shoulder provides a barrier blocking the traverse of said projection second end in said direction opposite to said one direction, and
said means comprises a resilient hinge on said carriage continuously and resiliently engaging and biasing said projection to project the second end thereof into receipt within said passageway.

B 376,654

KEY SWITCH APPARATUS

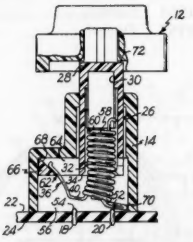
Robert T. Kravchuck, Lincoln, R.I., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 5, 1973, Ser. No. 376,654
Int. Cl. H01h *13/52*
U.S. Cl. 200—159 R **12 Claims**
Group Art Unit 217

References Cited

UNITED STATES PATENTS

2,264,955	12/1941	Schellenger	200/164 R
3,707,609	12/1972	Dapot et al.	200/159 B X



1. A keyboard switch, comprising:
an electrically insulative base having opposed first and second surfaces and having a plurality of apertures extending from the first to the second surface;
a pair of electrically conductive generally U-shaped members, each member having two legs joined by a bight portion, each of the legs received in a respective aperture in the base with the bight portion disposed adjacent the first surface, the top of the bights extending a distance d above the first surface;
an elongated keybody having a force receiving end and a force transmitting end;

a housing disposed over the pair of U-shaped members, the housing having guide means and an end wall aligned with the U-shaped members, the keybody received in the guide means and movable therein toward and away from the U-shaped members;

a movable electrically conductive contact bridge member disposed in the housing generally intermediate the U-shaped members and the keybody, the movable contact member having a first free distal end operatively connected to the keybody so that sufficient movement of the keybody away from the U-shaped members lifts at least a portion of the movable contact member away from the U-shaped members, a spring seat formed on the movable contact member;

a coil spring extending from the keybody to the spring seat; the movable member having first and second contact sections adapted to engage the respective bight portions of the pair of U-shaped members, the movable member having a projection extending downwardly below the first and second contact sections by a distance less than d, the movable member having a second distal end, an outwardly and upwardly curved portion extending from the second distal end adapted to engage the end wall when its normal operating position, whereby upon dislodgement of the movable member from its normal operating position to a position with the second distal end removed from the end wall and located intermediate the pair of U-shaped members the end of the coil spring is displaced away from the end wall so that a righting moment is exerted on the movable member, movement of the keybody toward the U-shaped members increases the righting moment and causes the movable member to slide over the first surface and bight portion of one of the U-shaped members to its normal operating position.

B 371,073

SWITCH WITH AN INDICATING MECHANISM

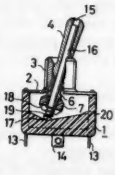
Yasuo Kodaira, 5-14 Minamimagome, 1-chome, Ota-ku, Tokyo, Japan

Filed June 18, 1973, Ser. No. 371,073
Int. Cl. H01h 9/16
U.S. Cl. 200—308 **11 Claims**
Group Art Unit 217

References Cited

UNITED STATES PATENTS

2,292,408	8/1942	Spencer	116/124 L
2,367,382	1/1945	Taylor	200/167 R
3,538,285	11/1970	Orts	200/167 R
3,619,533	11/1971	McFarland	200/167 R
3,729,607	4/1973	Ellenberger	200/167 R



1. In a switch an indicating mechanism comprising:

an actuating member having a longitudinally extending bore;

a movable indicating member slidably received in said bore;

a switch case including at least one inclined surface formed in the switch case;

a spring located at the lower end of said movable indicating member, urging the lower end of said member to make contact with and move along said inclined surface;

whereby the upper end of the indicating member is made to be selectively visible or concealed by extending out of or being recessed within the upper surface of the actuator in accordance with the operating position of said actuating member.

2. A switch with an indicating mechanism as set forth in claim 1 wherein said spring is inserted between a collar on said indicating member and a hemispherical portion provided at the lower end thereof.

B 420,016

APPARATUS FOR INDUCTIVELY HEATING THE BEARING SURFACES OF A CRANKSHAFT

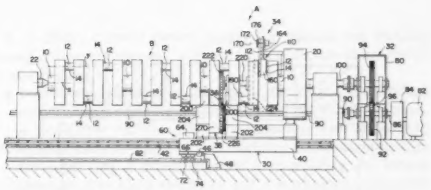
Fred C. Jensen, Euclid, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Nov. 29, 1973, Ser. No. 420,016
Int. Cl. H05b 5/08
U.S. Cl. 219—10.57 **11 Claims**
Group Art Unit 213

References Cited

UNITED STATES PATENTS

3,247,353	4/1966	Cory	219/10.57
3,300,614	1/1967	Sorensen	219/10.43
3,494,604	2/1970	Reinke et al.	266/4 EI



1. An apparatus for inductively heating the cylindrical surface of a bearing pin on a crankshaft as said crankshaft is rotated about its central axis, said surface having an axis generally parallel to said central axis and offset radially therefrom a given distance along a given radial line with respect to said crankshaft, said apparatus comprising: an inductor support element; an inductor generally matching said surface and carried by said element; means for rotating said crankshaft about said central axis whereby said pin axis orbits in a generally circular path concentric with said central axis and on a radius extending from said central axis said given distance; first and second members each rotated about its own pivot axis, said pivot axis being generally parallel to and coplanar with said central axis; a pivot pin carried by each of said first and second members and pivotally connected to said inductor support member, said pivot pins defining support means for said inductor support member and being generally spaced from one of said pivot axes in a direction generally parallel to said radial line and generally at said given distance; and, means driven by said rotating means for rotating said first and second members in timed relationship with said crankshaft.

B 260,455

PROCESS FOR WELDING A CLADDING ON A BASE MATERIAL

Jan Pieter Fokke Mulder, Rotterdam, Netherlands, assignor to De Rotterdamsche Droogdok Maatschappij N.V., Rotterdam, Netherlands

Filed June 7, 1972, Ser. No. 260,455

Claims priority, application Netherlands, June 10, 1971, 7107977

Int. Cl. B23k 9/04

U.S. Cl. 219—76 3 Claims

Group Art Unit 213

References Cited

UNITED STATES PATENTS

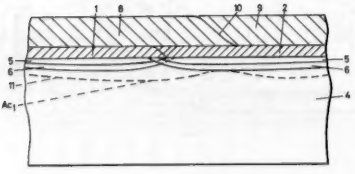
1,554,546	9/1925	Austin	219/137
2,416,379	2/1947	Colta	219/76
2,427,350	9/1947	Carpenter et al.	219/76
3,019,327	1/1962	Engel	219/76
3,139,511	6/1964	Kudelko	219/76
3,692,390	9/1972	Godai et al.	219/73

FOREIGN PATENTS OR APPLICATIONS

1,188,995	4/1970	Great Britain	219/76

OTHER PUBLICATIONS

"New Techniques For Cladding" Welding Journal, December 1960, pp. 1222–1229.



1. A process for welding a cladding onto a steel base material, the process comprising the steps of: cladding a first thin buffer layer of stainless steel cladding material onto said base material at a first welding speed and at a first welding temperature so that a region of said base material, near the cladded surface thereof, is austenitized to the extent that a course-grained region is developed; and cladding a second layer of stainless steel cladding material onto said first thin layer of cladding material at a second welding speed and a second welding temperature so that said course-grained region of base material is recrystallized to the extent that it is converted to a fine-grained region, and so that the temperature conditions which resulted in the development of the course-grained region of base material during the cladding of the first thin layer of cladding material are restricted to the boundaries of said first thin layer of cladding material.

B 415,957

PRESSURE OPERATED CONTROL FOR RESISTANCE WELDING MACHINES

Bernd Schneider, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 15, 1973, Ser. No. 415,957

Claims priority, application Germany, Nov. 23, 1972, 2257537

Int. Cl. B23k 11/10

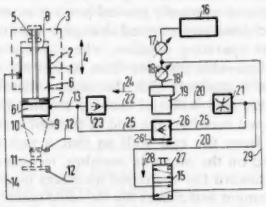
U.S. Cl. 219—89 9 Claims

Group Art Unit 213

References Cited

UNITED STATES PATENTS

2,286,104	6/1942	Platz	219/89
2,306,593	12/1942	Collom	219/110
2,824,949	2/1958	Vltavsky	219/89 X
3,076,087	1/1963	Boretti	219/89



1. In a pressure actuated control for energizing the electrodes of a resistance welding machine having a stationary anvil electrode,

a movable presure electrode,

means engaging pressure electrodes with a workpiece between said electrodes and pressurizing the pressure electrode to a predetermined pressure,

a source of fluid under pressure,

a fluid pressure cylinder,

a piston within said cylinder,

pressure inlets into said cylinder on opposite sides of said piston,

the admission of fluid under pressure to one side of said piston raising the pressure electrode above the workpiece and pressure on the opposite side of said piston engaging the pressure electrode with the workpiece,

a pressure-dependent triggering switch controlling the energization of said electrodes,

a first valve controlling the supply and release of fluid under pressure to opposite sides of said piston,

a pressure supply line from said source of supply of fluid under pressure to said first valve,

individual first and second pressure lines leading from said first valve to said cylinder, on opposite sides of said piston,

a second valve operated by fluid under pressure for controlling the supply of fluid under pressure to effect lowering of the pressure electrode to engage the workpiece with a predetermined pressure,

means for setting the pressure of closing of said pressure switch to a pre-set pressure of engagement of said pressure electrode with the workpiece,

including a throttle valve,

an operative connection from said second valve to said pressure-dependent switch, to effect closing of said switch upon the building of a predetermined pressure on the workpiece by said pressure electrode,

a check valve holding fluid under pressure in the end of said cylinder pressurizing said pressure electrode,

a bridging line bridging said first check valve and said second valve and having a check valve therein set to prevent the building up of pressure in said bridging line and to accommodate the release of fluid under pressure in the end of said cylinder pressurizing said pressure electrode.

B 346,210

METHOD OF STATIC TRIMMING OF FILM DEPOSITED RESISTORS

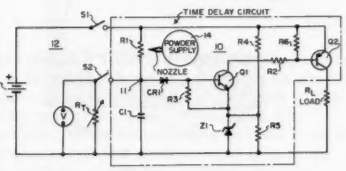
Thomas E. Ennis, Niles, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 29, 1973, Ser. No. 346,210
Int. Cl. B23k *27/00*
U.S. Cl. 219—121 LM **2 Claims**
Group Art Unit 213

References Cited

UNITED STATES PATENTS

3,486,221	12/1969	Robinson	219/121 LM
3,534,472	10/1970	Jong et al.	219/121 LM
3,548,303	12/1970	Helgeland	29/610
3,750,049	7/1973	Dowley et al.	331/94.5



1. A method of trimming a film deposited resistor of a resistor-capacitor combination of a time delay circuit adapted for coupling between a voltage source and a load for providing a time delay in the application of a voltage from said voltage source to said load and wherein said resistor and capacitor are coupled in series with one another and selectively in parallel with said voltage source, said method comprising the steps of selectively connecting said voltage source to said time delay circuit,

measuring the time delay between connection of said voltage source to said time delay circuit and the application of said voltage to said load to thereby determine an initial time delay,

selectively interconnecting a variable resistor in parallel with the capacitor of said resistor-capacitor combination, interconnecting means for measuring a voltage across said variable resistor,

adjusting said variable resistor to provide a first preselected voltage thereacross,

determining a final resistance value for said variable resistor according to the relationship

$$R_f = T_f/T_iR_i'$$

where

R_f is said final resistance value of said variable resistor,

T_f is the final time delay desired,

T_i is the initial time delay measured, and

R_i' is the resistance value of said variable resistor required to attain said first preselected voltage thereacross, readjusting said variable resistor to said final resistance value, and

trimming said film deposited resistor until the voltage across said variable resistor is returned to said first preselected voltage.

B 352,445

DIRECT CURRENT POWER SUPPLY FOR MANUAL ARC WELDING

Rolf Ericsson, 10, Lindasvagen, S-69500 Laxa, Sweden

Filed Apr. 18, 1973, Ser. No. 352,445
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 WR **10 Claims**
Group Art Unit 213

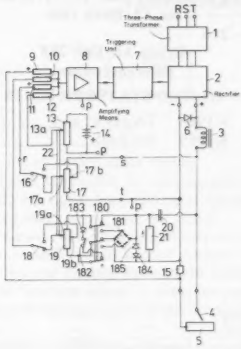
References Cited

UNITED STATES PATENTS

3,530,359	9/1970	Grist	219/135 X
3,584,186	6/1971	Stearns et al.	219/131 WR

OTHER PUBLICATIONS

A. F. Manz, "The One Knob Welder," Welding Journal, Sept. 1968, pp. 720–725.



1. A direct current power supply for manual arc welding having a steeply drooping, adjustable volt-ampere characteristic comprising

a polyphase transformer having a plurality of secondary output leads carrying mutually phase displaced voltages, a polyphase rectifier system connecting said secondary output leads to a pair of D.C. welding current conductors for supplying a direct current to a welding arc struck between a welding electrode and a workpiece, said polyphase rectifier system comprising a set of triggered rectifier valves connected one in series with each of said secondary output leads, said triggered rectifier valves having each a trigger terminal for initiating current flow through the valve,

means for periodically supplying igniting pulses to each of said trigger terminals, including means for causing the angular position of said pulses to vary in response to a direct current control signal,

means for generating said direct current control signal comprising the following means,

a. means for producing an adjustable direct current reference, signal, including manually operable means for adjusting said reference signal,

b. means including a welding current sensing means for producing a welding current feed-back D.C. signal equal to the welding current flowing in the paid of welding current conductors multiplied by a first factor of proportionality,

c. means including a welding voltage sensing means for producing a welding voltage feed-back D.C. signal equal to the voltage between the welding current conductors multiplied by a second factor of proportionality,

d. summing means for combining said reference signal, said welding current feed-back signal and said welding voltage feed-back signal into a compound signal constituting said control signal, both of said feed-back signals

being supplied to said summing means in opposing relationship to said reference signal,

e. slope adjustment means comprising means for adjusting the proportion between said first and second factors of proportionality, and,

f. means linking said manually operable means for adjusting the reference signal and said proportion adjusting means to provide automatically a desired correlation between the slope of volt-ampere characteristic of the power supply and the reference signal setting.

B 345,384
SELECTIVE FUSING

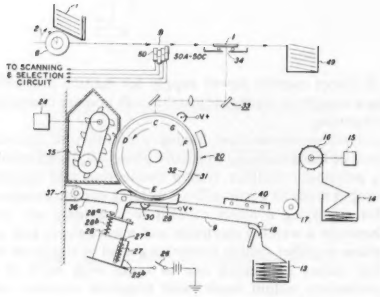
Mark A. Hutner, 3518 Winnetka Rd., Glenview, Ill. 60025

Division of Ser. No. 221,193, Jan. 27, 1972, Pat. No. 3,743,779. This application Mar. 27, 1973, Ser. No. 345,384
Int. Cl. H05b *1/00*
U.S. Cl. 219—216 **6 Claims**
Group Art Unit 213

References Cited

UNITED STATES PATENTS

3,398,259	8/1968	Tregay et al.	219/216
3,445,626	5/1969	Michaels	219/501 X



1. A method of regulating the operation of a fuser assembly in accordance with selected information requiring the energization of said fuser assembly wherein the selected information is provided by a plurality of preselected information signals, said signals being spaced in time, and wherein the radiant energy accumulated by said fuser assembly is a function of the expiration of time from an immediately preceding energization thereof, comprising the steps of:

sensing the occurrence of a preselected information signal to energize said fuser assembly for a pre-established minimum period of time; and

energizing said fuser assembly for a period of time that is dependent upon the interval of time that has expired immediately prior to the occurrences of the sensed preselected information signal without the occurrence of one of said plurality of preselected information signals.

B 335,773
BUILDING PLATES WITH CONTROLLABLE HEAT INSULATION

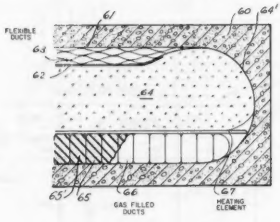
Nikolaus Laing, and Ingeborg Laing, both of Hofener Weg 35-37, 7141 Aldingen bei Stuttgart, Germany

Division of Ser. No. 830,457, June 4, 1969, Pat. No. 3,720,198. This application Feb. 26, 1973, Ser. No. 335,773
Claims priority, application Austria, Feb. 3, 1969, 1072/69; Feb. 3, 1969, 1068/69
Int. Cl. F24h *7/00*
U.S. Cl. 219—378 **5 Claims**
Group Art Unit 213

References Cited

UNITED STATES PATENTS

2,010,180	3/1932	Ferranti	219/378
3,244,224	4/1966	Hnilicka	165/32
3,281,578	10/1966	Chapman	219/528
3,411,156	3/1965	Feher	165/96 X
3,463,224	8/1969	Myers	165/96 X
3,546,432	12/1970	Eisler	219/213 X



1. Building plate with controllable heat insulation means comprising a first wall adapted to face a zone of a first temperature, a second movable wall opposite said first wall and adapted to face a zone of a second temperature, a heat storage element comprising a latent heat storage substance bounding said second wall on its side facing the zone of second temperature, wall moving means for moving said second wall towards and away from said first wall to vary the transfer of heat between the walls, and resiliant means for urging said heat storage element towards said second wall.

B 382,783
OMNIDIRECTIONAL OPTICAL SCANNER

Arlen J. Bowen; LeRoy D. Dickson; Jerome A. Goretzki; Kenneth E. Hendrickson; Donald P. King; Terrance W. Kueper, and Ronald L. Soderstrom, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 26, 1973, Ser. No. 382,783
Int. Cl. G06k *7/10;* **G08c** *9/06*
U.S. Cl. 235—61.11 E **8 Claims**
Group Art Unit 235

References Cited

UNITED STATES PATENTS

3,677,465	7/1972	Johnson et al.	235/61.11 E
3,684,867	8/1972	Acker	235/61.11 E
3,701,098	10/1972	Acker	235/61.11 E

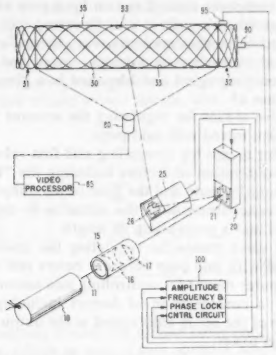
5. An omnidirectional scanning system for scanning coded labels on randomly oriented articles transported along a path through a scanning station comprising

a scan window positioned in the plane of said transport path;

light source means for providing a beam of light having a predetermined width;

first light beam deflector means oscillating at a first predetermined frequency and positioned to deflect said light beam away from said light source and in a first direction relative to said scan window;

second light beam deflector means oscillating at a second predetermined frequency and positioned to deflect the light beam deflected by said first deflector means in a



second direction relative to said scan window whereby said deflected light beam moves along a path inside and outside of said scan window so that path in said scan window appears as a series of interlaced X's;

first oscillating means for oscillating said first beam deflector means at said first predetermined frequency;

second oscillating means for oscillating said second beam deflector means at said second predetermined

means for locking said first and second oscillating means in phase and frequency.

B 354,296

TIMING CONTROL CIRCUIT FOR ELECTRONIC FUEL INJECTION SYSTEM

George A. Watson, Tustin, and John J. Bollinger, Orange, both of Calif., assignors to Rockwell International Corporation

Filed Apr. 25, 1973, Ser. No. 354,296

Int. Cl. G06m *3/02*

U.S. Cl. 235—92 MT **21 Claims**

Group Art Unit 237

References Cited

UNITED STATES PATENTS

3,209,130	9/1965	Schmidt	235/92 FQ
3,644,718	2/1972	Osborne et al.	235/92 CC
3,652,832	3/1972	Baumann	235/92 T
3,716,703	2/1973	Gordon	235/92 CC
3,790,720	2/1974	Schartmann	235/92 FQ

1. In combination,

signal supplying means for supplying signals having varying periodicity,

first means connected to said signal supplying means for producing a first control signal representative of the periodicity of signals supplied thereby,

second means connected to said signal supplying means for producing a second control signal representative of the periodicity of signals supplied thereby,

first counter means for producing a first function signal,

said first counter means connected to said first means to receive said first control signal to establish a first condition in said first counter means,

said first counter means connected to said second means to receive said second control signal to establish a different condition in said first counter means,

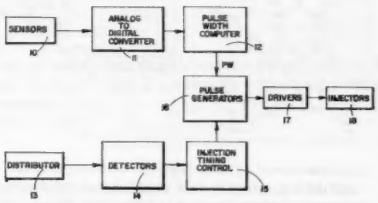
timer means for producing a timing signal,

said timer means connected to said second means to receive said second control signal to establish a first condition in said timer means,

second counter means for producing a second function signal,

said second counter means connected to said second means to receive said control signal to establish a first condition in said second counter means,

said second counter means connected to said timer means to receive said timing signal,



input means for supplying input signals,

said input means connected to said second counter such that said timing signal and said input signals control the operation of said second counter means,

first control means connected to said second means, to said timing means and to said second counter means to receive said second control signal, said timing signal and said second function signal in order to produce a third function signal representative of the relationship therebetween, and

output control means connected to said first counter means, said input means and said first control means to receive said input signals, said first function signal and said third function signal to produce an output control signal representative of the relationship therebetween.

B 323,203

WORK CYCLE MONITOR FOR MACHINE TOOLS AND THE LIKE

Sasha Komsa, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 12, 1973, Ser. No. 323,203

Int. Cl. H03k *21/09*

U.S. Cl. 235—92 PD **6 Claims**

Group Art Unit 237

References Cited

UNITED STATES PATENTS

3,044,699	7/1962	Smith	235/92 FP
3,329,806	7/1967	McCauley	235/92 PD
3,467,821	9/1969	Arp	235/92 PD
3,604,904	9/1971	Stiebel	235/92 PD
3,729,620	4/1973	Jones	235/92 FP

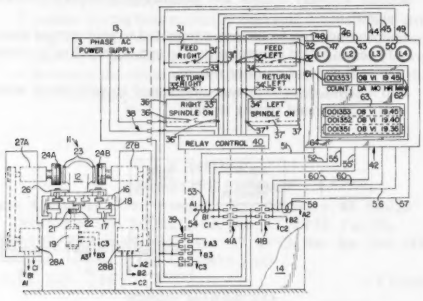
1. A system for counting work cycles at an electrically powered device comprising:

conductor means for supplying electrical energy to said device,

electrical power detection means coupled to said conductor means through an inductive coupling to receive a current signal therefrom and also connected to said conductor means through a conductive connection thereto to receive a voltage signal therefrom for producing an output signal indicative of the product of current and voltage in said conductor means and thus indicative of the amount of power being consumed by said device,

a counter having an input for receiving count signals and having means for indicating a cumulative total of count signals received,

count signal producing means coupled between said power detection means and said counter for transmitting a count signal to said counter in response to each repetition of a



predetermined pattern of power consumption variation at said device, wherein said count signal producing means responds to rises of power consumption above a predetermined value and has a first time delay means for preventing transmission of a count signal to said counter in response to a rise of power consumption at said device unless power consumption remains above said predetermined value for a predetermined period.

B 300,004

COMPUTER CONTROL SYSTEM FOR PAPER PULP BLEACH PLANT

Richard E. Putman, Penn Hills, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 77,551, Oct. 2, 1970, abandoned. This application Oct. 24, 1972, Ser. No. 300,004

Int. Cl. G06f *15/46*

U.S. Cl. 235—151.12 **23 Claims**

Group Art Unit 236

References Cited

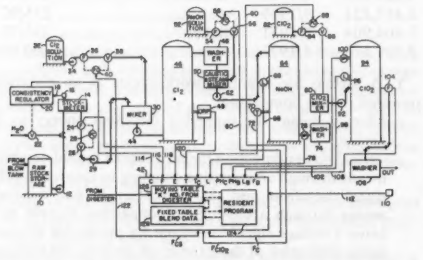
UNITED STATES PATENTS

3,272,691	9/1966	Shera	162/49 X
3,465,550	9/1969	Strom et al.	162/238 X
3,486,971	12/1969	Weyrick	162/49 X
3,575,795	4/1971	Brinkley, Jr. et al.	162/19

OTHER PUBLICATIONS

Kott, "Process Computer Control of a Bleach Plant," TAPPI, July, 1967, Vol. 50, No. 7, pp. 41A and 42A.

Guillory, "Progress Report on Computer Control of Eastex's Bleach Plant," Paper Trace Journal, Jan. 31, 1966, pp. 35 and 36.



1. A method for controlling the flow rate of chlorine to a chlorination tower comprising: producing a feed-forward signal proportional to chlorine fiber flow ratio as a function of pulp lignin content; producing a signal representing the relationship between initial unhydrolyzed chlorine concentration at the input of the tower to the unhydrolyzed chlorine concentration calculated from the measurement of chlorine concentration at a point on the side of the tower; modifying said feed-forward signal as a function of said signal representing the relationship between initial and measured chlorine concentrations to compensate for changes in the measured chlorine compensation at the sisde of said tower; and controlling the flow rate of chlorine to said tower as a function of said modified feed-forward signal and calculated fiber flow rate.

3. In a computer control system for a pulp bleaching plant of the type wherein pulp is initially mixed with chlorine and chlorinated in a chlorination tower, thereafter mixed with caustic and causticized in a caustic tower, and finally mixed with a bleaching agent and bleached in a bleach tower, the combination of:

first valve means for regulating the amount of chlorine in solution mixed with said pulp,

computer means for controlling said first valve means from a consideration of factors including the "K" number of the entering pulp and the ratio of the unhydrolyzed chlorine concentrations at the entrance to the chlorination tower and a point along its length,

second valve means for regulating the amount of caustic mixed with said pulp before it enters said caustic tower, computer means for controlling said second valve means from a consideration of factors including a computed value of the lignin chlorinated at the output of the chlorination tower,

third valve means for regulating the amount of bleaching agent mixed with said pulp before it enters said bleach tower, and

computer means for controlling said third valve means from a consideration of factors including a computed value of lignin remaining in the pulp at the output of the caustic tower.

9. In a computer control system for a chlorination tower of the type wherein pulp is mixed with a solution containing dissolved chlorine and introduced into the bottom of the chlorination tower whereby the pulp will be chlorinated as it passes upwardly thorugh the chlorination tower to form chlorinated lignin radicals, the combination of valve means for regulating the amount of chlorine in solution mixed with said pulp, and computer means for controlling said valve means from a consideration of factors including the "K" number of the entering pulp and the ratio of the unhydrolyzed chlorine concentrations at the entrance to the chlorination tower and the unhydrolyzed chlorine concentration calculated from a measurement made at a point along the tower's length.

B 322,239

METHOD AND SYSTEM FOR TESTING SIGNAL TRANSMISSION PATHS

Karl B. Avellar, Ellicott City, and James E. Buchanan, Bowie, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 9, 1973, Ser. No. 322,239

Int. Cl. G06f *11/02*

U.S. Cl. 235—151.31 **13 Claims**

Group Art Unit 236

References Cited

UNITED STATES PATENTS

3,591,790	7/1971	Couture	235/184
3,609,312	9/1971	Higgins	340/146.2
3,681,758	8/1972	Oster et al.	340/172.5
3,710,350	1/1973	Yoshitake et al.	340/172.5
3,746,850	7/1973	Moore et al.	235/184

FOREIGN PATENTS OR APPLICATIONS

1,179,243	1/1970	Great Britain	235/153 AC

6. A system for testing a plurality of paths for transmission of discrete d.c. signal levels comprising:

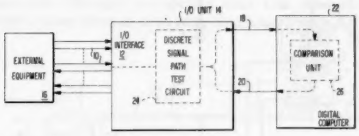
means for transmitting a configuration of discrete d.c. signal levels over said plurality of paths;

means responsive to and remote from said transmitting means for generating a digital signal representative of the sum of the amplitudes of the discrete signal levels transmitted over said plurality of paths;

means for storing a plurality of digital signals each representative of the sum of the discrete signal levels for a predetermined configuration of discrete signal levels transmitted over said paths;

means for ascertaining the configuration of discrete signal levels being transmitted over said plurality of signal paths; means for selecting one of said plurality of stored digital signals in response to the ascertained configuration;

means for comparing said generated digital signal with said selected one of said stored signals; and,



means operatively connected to said comparing means for indicating a fault in one of said paths in response to an unfavorable comparison of said digital signals.

9. A method for testing an apparatus which includes a plurality of paths over which discrete d.c. signal levels are transmitted between a computer and external equipment through a computer input/output unit wherein the plurality of paths are tested by the apparatus automatically performing the steps of:

a. transmitting a configuration of said discrete d.c. signal levels over said plurality of paths from a location remote from the input/output unit;

b. generating, at the input/output unit, a sum signal related to the sum of the discrete d.c. signal levels transmitted over said plurality of paths;

c. evaluating, at the digital computer, the sum signal with respect to the transmitted configuration of discrete d.c. signal levels; and,

d. manifesting the results of the evaluation.

B 392,696

PROGRAMMABLE DIGITAL FREQUENCY MULTIPLICATION SYSTEM WITH MANUAL OVERRIDE

Charles A. Lauer, and Francis A. Fluet, both of Clarence, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 29, 1973, Ser. No. 392,696
Int. Cl. G06f *7/38, 15/46*
U.S. Cl. 235—152 **7 Claims**
Group Art Unit 236

References Cited

UNITED STATES PATENTS

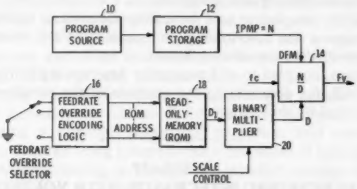
3,633,013	1/1972	Dummermuth	235/151.11
3,649,899	3/1972	Dummermuth	318/571
3,674,999	7/1972	Kelling	235/152

1. A frequency multiplication system having a first digital differential analyzer including a numerator shift register N and a denominator shift register D comprising:

means for applying a constant frequency pulse train fc to said first digital differential analyzer;

means for applying a maximum programmed coded input in the form of linear measure per unit time to said N shift register;

means for applying a programmable input D_1 to said D shift register which is a function of said maximum programmed coded input to said N register to provide for



scale of one-to-one weighted vector output velocity Fv, said vector velocity Fv being in accordance with the equation:

$Fv = fc \times N/D.$

B 355,595

ELECTRONIC COMPUTER FOR THE STATIC RECOGNITION OF THE DIVISIBILITY, AND THE DIVISION OF, NUMBERS DIVISIBLE BY THREE, SIX AND NINE

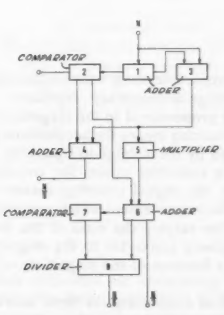
Jochen Haeusler, Nurnberg-Laufamholz, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 30, 1973, Ser. No. 355,595
Claims priority, application Germany, May 18, 1972, 2224329
Int. Cl. G06f *7/39*
U.S. Cl. 235—159 **6 Claims**
Group Art Unit 236

References Cited

UNITED STATES PATENTS

3,591,787	7/1971	Frieman	235/156 X
3,610,905	10/1971	Herron et al.	235/156 X
3,633,018	1/1971	Ling	235/156 X
3,648,038	5/1972	Sierra	235/156 X



1. An electronic computer for the static recognition of the divisibility, and the division, of numbers N which are divisible by the integers 3, 6 and 9, comprising:

means for summing the digits of a dividend N;

means, coupled to said summing means, for indicating the divisibility of the sum of the dividend digits by the integers 3, 6 and 9;

means, coupled to said summing means, for determining an integer *n* which is nearest but less than the quotient of the dividend N divided by the integer 9, from both the carrys of the sum of the dividend digits and the dividend N;

means, coupled to said means for determining said integer *n* and to said indicating means, for determining the quotient of the dividend N divided by the integer 9;

means, coupled to said means for determining said integer *n*, for tripling said integer *n*;

means, coupled to said indicating means and said tripling means, for determining the quotient of the dividend N divided by the integer 3; and

means, coupled to said means for determining the quotient N/3, for determining the quotient of the dividend N divided by the integer 6.

B 288,627

ELECTRONIC INTEGRATOR WITH VOLTAGE CONTROLLED TIME CONSTANT

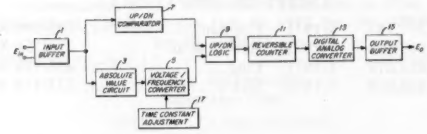
John Cuzzo, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 13, 1972, Ser. No. 288,627
Int. Cl. G06g 7/18
U.S. Cl. 235—183 **10 Claims**
Group Art Unit 236

References Cited

UNITED STATES PATENTS

3,313,924	4/1967	Schultz	340/347 AD
3,389,271	6/1968	Gray	340/347 NT
3,404,857	10/1968	Tippetts	340/347 NT
3,480,769	11/1969	Gilbert	235/183
3,504,267	3/1970	James	340/347 NT
3,505,673	4/1970	James	340/347 AD
3,550,018	12/1970	James	340/347 NT
3,614,633	10/1971	Yalshev et al.	235/183



1. In an electronic integrator wherein the integrating means includes a voltage-to-frequency converter for generating pulses at a rate proportional to the magnitude of the applied signal, digital counting means for accumulating a count of the pulses generated by the voltage-to-frequency converter, and digital-to-analog converter means for converting the count accumulated in the digital counting means into an analog output signal, the improvement which comprises voltage controlled means for varying the ratio of the pulse rate of the voltage-to-frequency converter to the magnitude of the applied signal as a function of the magnitude of a variable control voltage.

8. A method of controlling the time constant of a digital integrator as a function of a variable control voltage comprising the steps of,

generating a ramp signal having a negative slope proportional to the magnitude of the signal to be integrated,

generating a pulse signal each time the ramp signal decays to a predetermined level,

accumulating a count of said pulses,

converting said accumulated count to an analog voltage signal, and

resetting the ramp signal to a level proportional to said variable control voltage each time a pulse is generated, whereby the time constant of said digital integrator is a function of the magnitude of said variable control voltage.

B 355,095

PNEUMATIC CONTROL SYSTEM FOR SELF ALIGNMENT OF MOTOR VEHICLE HEADLIGHTS

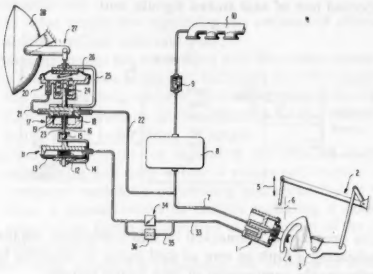
Rudolf Andres, Sindelfingen; Hermann Moller, Aidlingen, and Franz Seyfried, Sindelfingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Apr. 27, 1973, Ser. No. 355,095
Int. Cl. B60q 1/00
U.S. Cl. 240—7.1 LJ **14 Claims**
Group Art Unit 211

References Cited

FOREIGN PATENTS OR APPLICATIONS

1,506,590	11/1967	France	240/62.3



1. A pneumatically operating control system for the automatic alignment of motor vehicle headlights which includes control means coordinated to at least one axle of the motor vehicle which align the motor vehicle headlights to a substantially constant light distance in dependence on the change of the distance of the respective axle to the body of the motor vehicle by way of adjusting motor means and control shifting means, a vacuum supply means operatively connected with the control system, and pressure modulator means forming part of the control means for modulating the vacuum pressure in the control system, characterized in that an automatically operating valve means is arranged in a line means leading from said pressure modulator means to the adjusting motor means, said valve means being operable to substantially eliminate the throttling effect in said line means during strong braking and acceleration operations and thereby leading to an essentially immediate compensation of the change in angular value between the optical axis of the headlights and the road surface.

B 455,520

ION CYCLOTRON RESONACE SPECTROMETER AND METHOD

Jesse L. Beauchamp, 1780 San Pasqual, Pasadena, Calif. 91109

Continuation of Ser. No. 298,341, Oct. 17, 1972, abandoned. This application Mar. 28, 1974, Ser. No. 455,520
Int. Cl. B01d 59/44
U.S. Cl. 250—291 **8 Claims**
Group Art Unit 256

[56] **References Cited**

UNITED STATES PATENTS

3,446,957	5/1969	Gielow et al.	250/292
3,475,605	10/1969	Llewellyn	250/290
3,497,688	2/1970	Brown et al.	250/290
3,502,867	3/1970	Beauchamp	250/290
3,511,986	5/1970	Llewellyn	250/41.9 DS
3,742,212	6/1973	McIver	250/41.9 DS

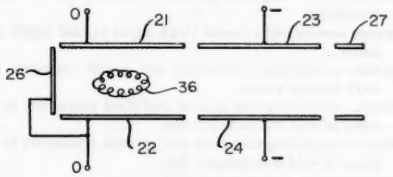
OTHER PUBLICATIONS

"An Ion Ejection Tech. for the Study of Ion-Mol. Reac. with Ion Cyclotron Resonance Spectroscopy,"

Beauchamp et al., Rev. Sci. Inst., Jan. 1969.

"Trapped Ion Anal. Cell for I.C.R. Spectroscopy," McIver Rev. Sci. Inst., April 1970.

1. In an ion cyclotron resonance spectrometer, means forming an ion source region, means for ionizing gaseous substances within said ion source region to form a plurality of different ion species, an analyzing region, means for directing a magnetic field through said source and analyzing regions, means for applying static electric fields to said source region and analyzing region which together create a potential configuration with equi-potential lines which close themselves within the source region and which together with said magnetic field serves to constrain the different ion species to move in said source region on said equi-potential lines to remain in the source region for the same predetermined time, means for thereafter applying electric fields to said source and analyzing regions which together create a potential configuration which releases said different ion species after said predetermined time and causes them to drift from said source region through

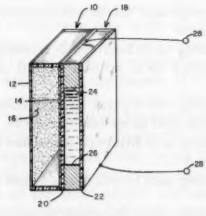


said analyzing region, and means for detecting the different ion species as they drift through the analyzing region.

8. The method of measuring ion intensity of constituents in a reaction comprises forming different ion species by impacting a pulse of electrons on a gas to be analyzed in an ion source region, constraining said different ion species so that they move only in said source region for the same predetermined period of time and then allowing the ions to drift from the source region through an analyzing region of an ion cyclotron resonance spectrometer to measure the signal intensity of each of said ion species.

B 398,625
LOSS OF POWER INDICATOR
Harry W. Moore, III., Univak Pk., St. Paul, Minn. 55165
Filed Sept. 19, 1973, Ser. No. 398,625
Int. Cl. G04b *19/32*
U.S. Cl. 250—459 **2 Claims**
Group Art Unit 256
References Cited
UNITED STATES PATENTS

3,038,271	6/1962	MacHutchin et al.	250/462 X
3,071,105	1/1963	Wertheimer	250/458 X
3,322,485	5/1967	Williams	350/160 LC



1. A method of providing an observable manifestation of a drop in electrical voltage comprising the steps of:

a. providing a self-contained radiation stimulated phosphor light source;

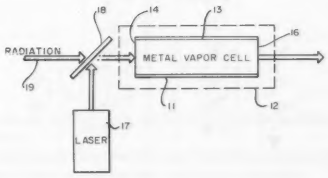
b. positioning a nematic liquid crystal electrooptic type cell in the path between said light source and an observer; and

c. connecting the electrodes of said cell to the electrical voltage to be monitored such that when said voltage is above a predetermined threshold said cell is optically opaque and when said voltage is below said threshold, said cell is optically transparent.

2. An article of manufacture, comprising a compartment having a predetermined area therof optically transparent and containing a radiation stimulated phosphor, said optically transparent area being covered with a first sheet of light polarizing material having a transparent metallic coating on on surface thereof, a second sheet of light polarizing material having a transparent metallic coating on one surface thereof held in a parallel but spaced apart relationship to said first sheet by a gasket, the space being filled with organic nematic liquid crystal material and electrical leads connected to said metallic coatings on said first and second sheets.

B 437,195
TWO-PHOTON PUMPED FREQUENCY CONVERTER AND METHOD
Stephen E. Harris, 880 Richardson Ct., Palo Alto, Calif. 94306
Filed Jan. 28, 1974, Ser. No. 437,195
Int. Cl. H02m *5/04;* **H03f** *7/00*
U.S. Cl. 307—88.3 **19 Claims**
Group Art Unit 252
References Cited
UNITED STATES PATENTS

3,795,819	3/1974	Harris	307/88.3



1. A frequency converter for converting low frequency input energy to higher frequency output energy comprising means containing a metal vapor at predetermined pressure, a high energy pump source projecting energy into said metal vapor to excite the metal atoms, said energy being selected such that the sum of two photons equals the spacing of a non-allowed transition in said metal vapor, said means containing the metal vapor disposed to receive said low frequency energy whereby said energy couples the excited metal atoms to allow transition to ground to provide an output having a frequency equal to the sum of the two photons plus or minus the low frequency input energy.

16. An image converter for converting infra-red input energy from an object to energy at the visible or ultra-violet region of the spectrum comprising means containing a metal vapor at predetermined pressure, a high energy pump source projecting energy into said metal vapor to excite the metal

atoms, said energy being selected such that the sum of two photons equals the spacing of a non-allowed transition in said metal vapor, said means containing the metal vapors disposed to receive said infra-red energy whereby said energy couples the excited metal atoms to an allowed transition to ground to provide an output having a frequency equal to the sum of the frequency of the two photons plus or minus the frequency of the infra-red energy.

B 355,876

TIME SHARING INFORMATION CIRCUIT

Yasoji Suzuki, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Kawasaki, Japan

Filed Apr. 30, 1973, Ser. No. 355,876
Int. Cl. H03k *17/00*
U.S. Cl. 307—205 11 Claims
Group Art Unit 254

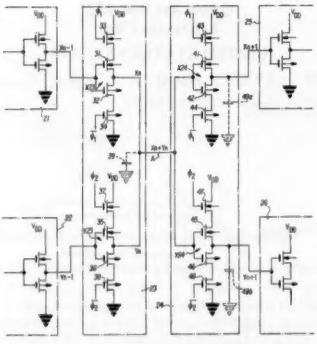
References Cited

UNITED STATES PATENTS

3,393,325	7/1968	Borror et al.	307/308
3,601,634	8/1971	Ebertin	307/270
3,737,673	6/1973	Suzki	307/305

FOREIGN PATENTS OR APPLICATIONS

1,178,460	9/1964	Germany	179/15 A



1. A time sharing information transmission circuit comprising,
a time sharing circuit having two inputs and an output,
a restoring circuit having one input and two outputs,
a transmission line connected between the output of said time sharing circuit and the input of said restoring circuit, said time sharing circuit comprising,
a first insulated gate field effect transistor,
a second insulated gate field effect transistor,
a third insulated gate field effect transistor,
a fourth insulated gate field effect transistor,
a fifth insulated gate field effect transistor,
a sixth insulated gate field effect transistor,
a seventh insulated gate field transistor,
an eighth insulated gate field effect transistor,
means connecting a first clock signal to said first transistor,
means connecting a first voltage source to said first transistor,
means connecting said first transistor to said second transistor,
means connecting said second transistor to said third transistor,
means connecting a first information signal to said second and third transistors,
means connecting said third transistor to said fourth transistor,
means connecting a second clock signal to said fourth transistor,
means connecting said fourth transistor to a fifth voltage source,
means connecting a third clock signal to said fifth transistor,
means connecting a second voltage source to said fifth transistor,
means connecting said fifth transistor to said sixth transistor,
means connecting said sixth transistor to said seventh transistor,
means connecting a second information signal to said sixth and seventh transistors,
means connecting said seventh transistor to said eighth transistors,
means connecting a fourth clock signal to said eighth transistor,
means connecting connecting said eighth transistor to a sixth voltage source,
means connecting said second and third transistors to said input of said transmission line,
means connecting said sixth and seventh transistors to said input of said transmission line,
said restoring circuit comprising,
a ninth insulated gate field effect transistor,
a tenth insulated gate field effect transistor,
an eleventh insulated gate field effect transistor,
a twelfth insulted gate field effect transistor,
a thirteenth insulated gate field effect transistor,
a fourteenth insulated gate field effect transistor,
a fifteenth insulated gate field effect transistor,
a sixteenth insulated gate field effect transistor,
means connecting said first clock signal to said ninth transistor,
means connecting a third voltage source to said ninth transistor,
means connecting said ninth transistor to said tenth transistor,
means connecting said tenth transistor and said eleventh transistor to a first output of said restoring circuit,
means connecting the output of said transmission line to said tenth and eleventh transistors,
means connecting said eleventh transistor to said twelfth transistor,
means connecting said second clock signal to said twelfth transistor,
means connecting said twelfth transistor to a seventh voltage source,
means connecting said third clock signal to said thirteenth transistor,
means connecting a fourth voltage source to said thirteenth transistor,
means connecting said thirteenth transistor to said fourteenth transistor,
means connecting said fourteenth transistor and said fifteenth transistor to a second output of said restoring circuit,
means connecting the output of said transmission line to said fourteenth and fifteenth transistors,
means connecting said fifteenth transistor to said sixteenth transistor,
means connecting said fourth clock signal to said sixteenth transistor,
means connecting said sixteenth transistor to an eighth voltage source.

B 459,425

LOGICAL CIRCUIT WITH FIELD EFFECT TRANSISTORS

Henri J. Oguey, Peseux, and Eric Andre Vittoz, Cernier, both of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland

Continuation of Ser. No. 308,586, Nov. 21, 1972, abandoned. This application Apr. 9, 1974, Ser. No. 459,425

Claims priority, application Switzerland, Nov. 22, 1971, 16966/71

Int. Cl. H03k *19/08, 19/20, 23/00*

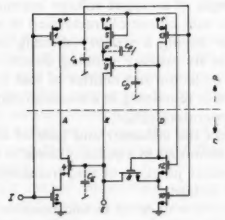
U.S. Cl. 307—225 C 2 Claims

Group Art Unit 254

References Cited

UNITED STATES PATENTS

3,493,785	2/1970	Rapp	307/255 X
3,737,673	6/1973	Suzuki	307/205
3,745,371	7/1973	Suzuki	307/221 C



1. A binary frequency divider stage circuit with insulated gate field effect transistors (MOST) powered by a constant voltage source, comprising an input I for introducing an input signal and at least three logical nodes, each logical node being an interconnection between the drains of at least one n-channel MOST and at least one p-channel MOST, each logical node being connected to control means of at least one other node and being able to be used as an output, the source of one of the MOST (1) of at least one of the nodes (A) being connected to one terminal of the voltage source and the source of the other MOST (A) of the same node being connected to the drain of a third MOST (2), the source of which is connected to the other terminal of the voltage source, the node (A) establishing the interconnection between the drains of the p- and n-channel MOST being controlled by two variables, one being the input signal and the other being the signal from an other logical node (E), in such a way that one variable (1) drives the gates of the third MOST (2) and one p-channel MOST, and the other variable drives the gate of the n-channel MOST (4), allowing the corresponding node to float when this transistor (4) as well as the complementary transistor (1) driven by the other variable are both blocked.

B 428,177

CIRCUIT TO RAISE A QUANTITY TO A PREDETERMINED POWER

Harold W. Jackson, 1308 Putty Hill Ave., Baltimore, Md. 21204

Filed Dec. 26, 1973, Ser. No. 428,177

Int. Cl. H03k *17/00*

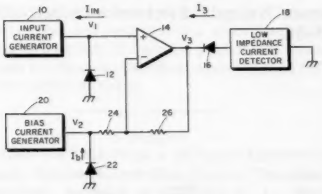
U.S. Cl. 307—229 8 Claims

Group Art Unit 254

References Cited

UNITED STATES PATENTS

3,521,273	7/1970	Saari	307/229 X
3,569,736	3/1971	Tschinkel	328/145
3,793,480	2/1974	Waehner	328/144 X



1. A circuit for raising a quantity to a predetermined power comprising:

an operational amplifier having first and second high impedance input terminals and an output termainl:

a first constant voltage terminal;

first diode means for connecting said first terminal to said first constant voltage terminal;

first resistor means for connecting said second terminal to said output terminal;

a bias current terminal;

second resistor means for connecting said second terminal to said bias current terminal;

a second constant voltage terminal;

second diode means for connecting said bias current terminal to said second constant voltage terminal;

a third constant voltage terminal;

third diode means for connecting said operational amplifier output terminal to said third constant voltage terminal;

means for injecting a bias current at said bias current terminal, said bias current thereby flowing in said third diode means;

means for injecting an input current at said first input terminal, said input current being related to said quantity to be raised to a predetermined power, and the resultant current through said third diode means being thereby related to the quantity as raised to said predetermined power.

B 389,726

PEAK VOLTAGE DETECTOR CIRCUITS

Roger Thomas Griffin, Flackwell Heath, England, assignor to RCA Corporation

Filed Aug. 20, 1973, Ser. No. 389,726
Claims priority, application Great Britain, Dec. 18, 1972, 58282/72
Int. Cl. H03k 5/153, 19/38, 19/40
U.S. Cl. 207—235 A 37 Claims
Group Art Unit 254

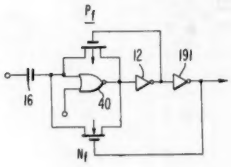
References Cited

UNITED STATES PATENTS

3,304,437	2/1967	Dano	328/127 X
3,356,858	12/1967	Wanlass	307/214 X
3,431,433	3/1969	Ball et al.	307/221 C
3,471,714	10/1969	Gugliotti, Jr., et al.	307/255 X
3,599,018	8/1971	Washizuka et al.	307/251 X
3,601,629	8/1971	Cricchi	307/205
3,610,964	10/1971	Hatano et al.	307/214 X
3,631,528	12/1971	Green	307/251
3,654,486	4/1972	Cubert	307/214
3,728,556	4/1973	Arnell	307/304 X
3,739,193	6/1973	Pryor	307/251 X

OTHER PUBLICATIONS

Coppen, "FET Complementary Integrated Circuits: Aerospace Natural," Electronics (pub.), 12/28/1964, pp. 55–58.



21. An electronic circuit comprising:

first and second semiconductor devices of different conductivity types arranged in complementary symmetry and each having a conduction path and a control electrode, their conduction paths being coupled in series between two operating voltage terminals;

an output terminal connected to the coupling between said two conduction paths;

input terminal means including an input point at a common connection to said control electrodes of said two devices; and

a feedback path coupled between said output terminal and said input terminal means; and

means coupled to said input terminal, means responsive to the peak values in a given sense of an input signal applied to said input terminal means for activating and then deactivating said feedback path each time said input signal reaches said peak value in said given sense.

35. In combination:

an inverter having an input terminal and an output terminal; a normally open feedback circuit connected between said two terminals; and

means coupled to said input terminal and responsive to the peaks, in a given sense, of the input signal applied to said input terminal for closing and then reopening said feedback path during each such peak of said input signal.

B 389,639

SAMPLING CIRCUIT

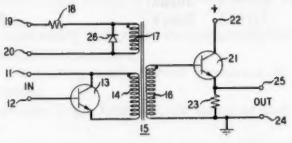
William Anders Peterson, Lake Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 21, 1973, Ser. No. 389,639
Int. Cl. H03k 17/00
U.S. Cl. 307—235 R 8 Claims
Group Art Unit 254

References Cited

UNITED STATES PATENTS

3,136,960	6/1964	Ausfresser	332/12
3,165,650	1/1965	White	307/314



1. A sampling circuit having a transistor which in response to being gated into conduction produces at a pair of output terminals a sample of an input voltage appearing at a pair of input terminals, said circuit characterized in that:

a transformer having a primary winding and a secondary winding has its primary winding directly connected between the collector and emitter of said transistor;

said transformer remaining in a nonsaturating mode over its intended operating range;

means connect the collector and base of said transistor to said input terminals in a polarity sense to reverse-bias the base-to-emitter junction of said transistor in response to said input voltage;

a pulse source is connected to said transformer to induce a voltage across said primary winding which if not otherwise limited would exceed the summation of the amplitudes of said input voltage and the voltage across the base-to-emitter junction of said transistor when said base-to-emitter junction is forward-biased, said induced voltage being in a polarity sense to forward-bias said transistor; and

means connect said secondary winding between said output terminals.

B 399,304

SIGNAL GATE CIRCUIT

Takashi Okada, Yamato, and Kimitake Utsunomiya, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 21, 1973, Ser. No. 399,304
Claims priority, application Japan, Sept. 22, 1972, 47-110350
Int. Cl. H03k 17/00
U.S. Cl. 307—254 5 Claims
Group Art Unit 254

References Cited

UNITED STATES PATENTS

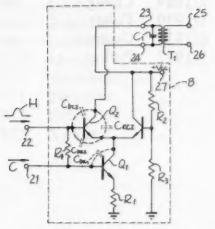
3,550,087	12/1970	Ross et al.	330/30 D
3,733,562	5/1973	Cecchin et al.	330/30 D
3,781,701	12/1973	Cecchin et al.	330/30 D

1. A gate circuit comprising:

A. an information signal input terminal;

B. a gate signal input terminal;

C. a differential circuit comprising first, second and third semiconductor devices, each having first, second and third electrodes;
D. first and second power-supply terminals;
E. first circuit means connecting the first electrode of said first semiconductor device to said information signal input terminal;
F. second circuit means connecting the second electrode of said first semiconductor device to said second power supply terminal;
G. third circuit means connecting the first electrode of one of said second and third semiconductor devices to said gate signal input terminal;
H. biasing means connected to the first electrode of the other of said second and third semiconductor devices to bias the same to a normally conductive state;



I. fourth circuit means connecting the second electrodes of said second and third semiconductor devices to the third electrode of said first semiconductor device;
J. an output terminal connected to the third electrode of said second semiconductor device;
K. fifth circuit means connecting the third electrode of said third semiconductor device to said first power supply terminal; and
L. sixth circuit means connecting said gate signal input terminal to said first semiconductor device, whereby both said first and second semiconductor devices are made conductive during at least a portion of said gate signal and are made non-conductive between successive gate signals.

B 319,402

DYNAMIC TWO DEVICE MEMORY CELL WHICH PROVIDES D.C. SENSE SIGNALS

Fritz H. Gaensslen, Yorktown Heights, and Paul J. Krick, Crugers, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,402
Int. Cl. H03k *3/26, 19/08*
U.S. Cl. 307—304 **7 Claims**
Group Art Unit 254

References Cited

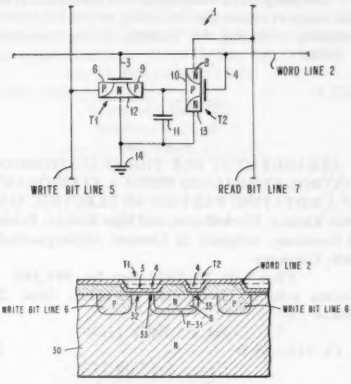
UNITED STATES PATENTS

3,609,479	9/1971	Lin et al.	317/235
3,697,962	10/1972	Beausoleil et al.	207/238
3,721,839	3/1973	Shannon	317/235
3,794,862	2/1974	Jenne	317/235 G

FOREIGN PATENTS OR APPLICATIONS

2,105,251	4/1972	France	317/235

1. A semiconductor memory cell comprising:
a first substrate of a first field effect transistor of one semiconductor conductivity type,
a second substrate of a second field effect transistor of second semiconductor conductivity type formed in said first substrate,
a region of said second conductivity type disposed in said first substrate,
a region of said one conductivity type disposed in said second substrate, and



means electrically connected to said region of second conductivity type, and said first and second substrates for applying at least first and second potentials to said second substrate to adjust the threshold of said second FET to at least two different values.

B 343,240

MOUNTING DEVICE FOR A QUARTZ RESONATOR

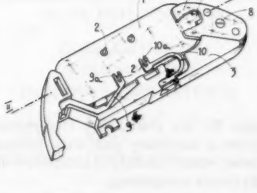
Rene Meister, Neuchatel, and Alain Tyrode, Colombier, both of Switzerland, assignors to Ebauches S. A.,, Neuchatel, Canton of Neuchatel, Switzerland

Filed Mar. 21, 1973, Ser. No. 343,240
Claims priority, application Switzerland, Mar. 21, 1972, 4142/72
Int. Cl. H01v *7/00*
U.S. Cl. 310—9.1 **3 Claims**
Group Art Unit 212

References Cited

UNITED STATES PATENTS

3,372,308	3/1968	Noschese et al.	317/101 CC
3,441,853	4/1969	Bodine	317/101 CC
3,483,402	12/1969	Royer	310/9.1 X
3,573,617	4/1971	Randolph	317/101 CC
3,754,153	8/1973	Carpenter et al.	310/9.1



1. Mounting device for rigidly and removably mounting a quartz resonator, the resonator including a housing with a quartz crystal therein and at least one pin for providing an electrical connection to the quartz crystal, said mounting device comprising,
support means for supporting the housing of the resonator, said support means including,

a frame including walls which define a notch on one side of the frame for surrounding a first ear of the housing, a resilient conductor secured to said frame, said conductor including means for elastically and electrically coupling the conductor to the pin of the resonator,

said support means also including means for removably and rigidly mounting the housing of the resonator to said frame.

B 399,349

ARRANGEMENT FOR THE TRANSMISSION OF CONTROL COMMANDS FROM A STATIONARY PART TO A ROTATING PART OF AN ELECTRIC MACHINE

Martin Richter, Marloffstein, and Ingo Kroger, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 20, 1973, Ser. No. 399,349

Claims priority, application Germany, Sept. 21, 1972, 2246424

Int. Cl. H02k *11/00*

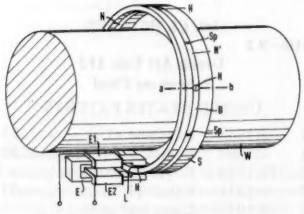
U.S. Cl. 310—68 D **11 Claims**

Group Art Unit 212

References Cited

UNITED STATES PATENTS

3,083,314	3/1963	Ratajski	310/DIG. 3
3,165,685	1/1965	Manteuffel et al.	310/DIG. 3



1. Apparatus for the contactless transmission of control commands from a stationary part to a rotating part of an electric machine, which machine is controlled through the use of rotating thyristors comprising:

a. a ring shaped anti-magnetic signal receiving member adapted to be coupled to the machine shaft and having installed, at the circumference of the ring, a plurality of Hall effect generators;

b. a stationary electromagnet having poles forming an air gap located so that said signal receiving member will rotate therein; and

c. means to provide a control signal to said electromagnet.

B 389,295

CAPSTAN MOTOR HAVING A CERAMIC OUTPUT SHAFT AND AN ADHESIVELY ATTACHED CAPSTAN

Adolfo M. Guzman, and Harlan D. Lawes, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 17, 1973, Ser. No. 389,295

Int. Cl. H02k *7/10*

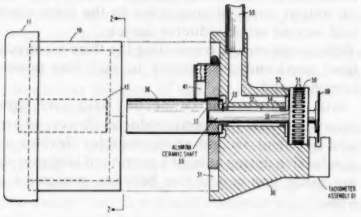
U.S. Cl. 310—75 **8 Claims**

Group Art Unit 212

References Cited

UNITED STATES PATENTS

3,102,964	9/1963	Bennett	310/154
3,209,187	9/1965	Angele	310/154
3,326,440	6/1971	Barnes	226/188
3,335,309	8/1967	Hansen	310/266
3,418,505	12/1968	Mihalko	310/266
3,429,494	2/1969	Chang	226/42
3,490,672	1/1970	Fisher	310/75
3,588,556	6/1971	Guzman	310/266
3,678,313	7/1972	Parker	226/188



1. A high torque — low inertia tape drive capstan motor, comprising:

a stationary magnetic field structure providing an air gap,

a rotatable armature positioned to rotate within said air gap, a ceramic shaft connected to be driven by said armature by having one end thereof attached to the center of rotation of said armature, and

a tape drive capstan adhesively attached to the other end of said shaft in close physical proximity to said armature and said magnetic field structure, the heat insulation and magnetic reluctance properties of said shaft functioning to isolate said capstan and its adhesive interface from temperature rise and magnetic field induced by motor operation.

B 360,910

STATORLESS DYNAMO-ELECTRIC MACHINE

Encho Nikolov Popov, 27, E. Markov. Str.; Nikola Ganev Diakov, 25, Boul. Fr. Nansen; Emilia Dobreva-Dimitrova, 27, Benkovski Str.; Roumen Konstantinov Apostolov, 6, Kl. Ohridoki Str., and Hristo Petkov Hristov, 77, Latinka Str., all of Sofia, Bulgaria

Continuation-in-part of Ser. No. 178,765, Sept. 8, 1971,. This application May 16, 1973, Ser. No. 360,910

Int. Cl. H02k *13/00*

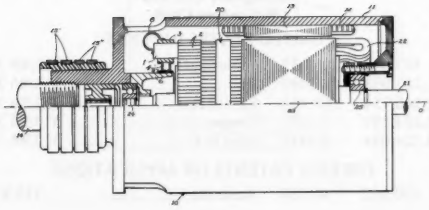
U.S. Cl. 310—242 3 Claims

Group Art Unit 212

References Cited

UNITED STATES PATENTS

2,758,231	8/1956	Welter	310/237
3,079,518	2/1968	Moore	310/115
3,191,080	6/1965	Edwards	310/115
3,244,917	4/1966	Gute	310/237
3,252,023	5/1966	Schmidt	310/115
3,275,861	9/1966	Goroszko	310/46
3,514,654	5/1970	Moresi	310/237
3,526,797	9/1970	Jueschke	310/245
3,624,433	11/1971	Jaeschke	310/67
3,631,273	12/1971	Stein	310/46
3,704,759	12/1972	Vitkov	310/67



1. In a dynamo-electric machine including a rotor armature with a commutator on a face transverse to the axis of rotation, a rotatable inductor centered on said axis, and a set of brush holders with brushes carried by said inductor for contact with said commutator, the improvement wherein said inductor is provided with carrier means for said brushes and elastically deformable mounting on said carrier means supporting each brush holder with limited axial mobility whereby the corresponding brush is centrifugally biased toward said commutator upon rotation of said inductor, said carrier means forming a base for each brush holder disposed radially inwardly thereof, said mounting means forming at least one leg extending generally radially outwardly from said base to the associated brush holder.

B 395,478

CHANNEL PLATE ELECTRON MULTIPLIER ADJACENT COLOR DOT SCREEN

Richard Kaspar Orthuber, Sepulveda, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 198,835, Nov. 15, 1971, abandoned. This application Sept. 10, 1973, Ser. No. 395,478

Int. Cl. H01j *43/24*, *37/22*

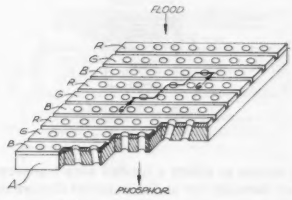
U.S. Cl. 313—105 6 Claims

Group Art Unit 252

References Cited

UNITED STATES PATENTS

3,176,178	3/1965	Goodrich et al.	313/104
3,260,876	7/1966	Manley et al.	313/103
3,483,422	12/1969	Novotny	313/105



1. A device for registering color phosphor dots in a television tube comprising, a phosphor screen coated with color dots, a dielectric channel plate electron multiplier positioned adjacent said phosphor screen, said channel plate including a plurality of parallel columns of holes therethrough between opposite sides of said plate, said holes having resistive secondary emissive surfaces therein, electrodes on said opposite sides having corresponding holes coinciding with said dielectric plate holes, one of said electrodes on one side including a plurality of spaced parallel electrodes along respective columns of holes, the holes in each respective column having a common axial angle through said plate with respect to the plane of said screen different from the angle of the holes in each adjacent column, each column of holes with respective different common angles being repetitive in every third column across said plate, and each column of holes being aligned with a corresponding column of phosphor dots on said screen.

B 393,970

CATHODE STRUCTURE FOR CATHODE RAY TUBE

Floyd K. Collins, and John J. Miller, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporation, Stamford, Conn.

Continuation of Ser. No. 256,431, May 24, 1972, abandoned. This application Sept. 4, 1973, Ser. No. 393,970

Int. Cl. H01j *1/94*, *19/48*

U.S. Cl. 313—270 4 Claims

Group Art Unit 256

References Cited

UNITED STATES PATENTS

2,413,689	1/1947	Clark et al.	313/337 X
2,445,993	7/1948	Beggs	313/337 X
3,293,476	12/1966	Feinleib et al.	313/270 X

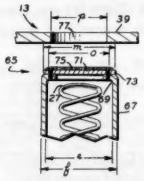
1. An improved two-piece indirectly heated end-emissive cathode structure having a jointure region of minimum mass for use in a cathode ray tube, said cathode structure comprising:

a tubular cathode sleeve formed of a substantially passive cathode material having top and bottom open ends and a sidewall portion therebetween and dimensioned to ac-

commodate associated thermionic heater means therein, said bottom end of said tubular cathode being formed for affixation to cathode support means;

a narrow terminal ledge extremitally formed to be perimetrically instanding at the open top end of said sleeve in a manner whereof said ledge is formed substantially normal to the sidewall of said sleeve;

a substantially planar disc-shaped closure member formed of a substantially active cathode material having a perimetric shape similar to that of said cathode sleeve and a transverse diametrical dimension not exceeding the external cross-sectional dimentioning of said sleeve, said closure member being seated directly upon said narrow ledge to facilitate contiguous affixation thereto; and



bonding means to effect a limited area transverse terminal jointure between the active material closure member and the ledge oriented passive material of said cathode tubular member, said transverse jointure being peripherally oriented and of minimum mass prevents doming of the planar closure member and promotes rapid heating of the cathode while minimizing the heatsink characteristics of the cathode structure, said active material closure portion providing a flat substrate having an area approximating the cross-sectional area of said sleeve whereupon a coated area of electron emissive material is subsequently disposed.

B 328,391

IMAGE PICK-UP TUBE HAVING A PLURALITY OF ELECTRODES ON THE FACE-PLATE

Mikio Ashikawa, and Iwao Takemoto, both of Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1973, Ser. No. 328,391
Claims priority, application Japan, Jan. 31, 1972, 47-10582
Int. Cl. H01j *31/26*
U.S. Cl. 313—365 **13 Claims**
Group Art Unit 256

References Cited

UNITED STATES PATENTS

3,379,822	4/1968	Haans et al.	313/331 X
3,582,978	6/1971	Petersen	313/64
3,675,062	7/1972	Flasche	313/65 R
3,714,488	1/1973	Kato	313/65 R
3,721,752	3/1973	Kakizaki	178/5.4 F

1. An image pick-up tube comprising

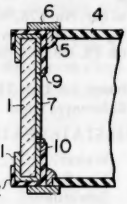
a. a vacuum envelope made of an electrically insulating material,

b. a transparent and optically flat face-plate made of electrically insulating material, said face-plate being associated with said vacuum envelope so as to define a vacuum side and a non vacuum side on opposite sides of said face plate,

c. a plurality of electrodes formed on the inner surface of said face-plate and electrically insulated from each other,

d. a plurality of conductive members bridging the face plate and thus having portions on both the vacuum side and non-vacuum side of said face plate, said conductive members providing external communication between said plurality of electrodes and the outer surface of the face plate, at least one of said plurality of conductive members being in the form of a thin film,

e. one of said plurality of conductive members comprising an annular sealing means made of a low-melting-point metal interposed between said vacuum envelope and said face-plate on the inside of the pick-up tube, and a ring of



an electrically conductive material associated with the external end portion of said vacuum envelope and in electrical contact with the annular sealing means, and

f. an insulating thin film associated with at least one portion of said thin-film conductive member and serving to seal hermetically said vacuum envelope and said face-plate together with the thin-film conductive member.

B 381,074

ELECTRON GUN WITH GRID AND ANODE HAVING ORTHOGONAL ELONGATED APERTURES

Jan Hasker, and Jacobus Johannes Maria Joseph De Klerr, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation

Continuation of Ser. No. 166,935, July 28, 1971, abandoned.
This application July 20, 1973, Ser. No. 381,074
Int. Cl. H01j *29/46, 29/56*
U.S. Cl. 313—448 **1 Claim**
Group Art Unit 252

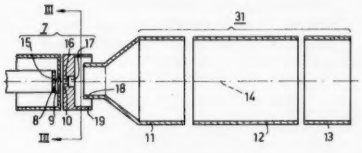
References Cited

UNITED STATES PATENTS

2,103,645	12/1937	Schlesinger	313/86 X
2,223,908	12/1940	Bull	313/86 X
2,840,754	6/1958	Linder	313/86 X
2,884,559	4/1959	Cooper et al.	313/86 X
3,524,094	8/1970	Hasker et al.	313/86 X

FOREIGN PATENTS OR APPLICATIONS

100,660	4/1937	Australia	313/83



1. A cathode-ray tube comprising an electron gun having, axially aligned, a cathode having substantially rotational symmetry, a grid, an anode and an acceleration electrode for producing an electron beam, said cathode-ray tube further comprising an electron focusing lens and a target plate comprising stripes of electro-luminescent material oriented in a first direction, said grid having a narrow, elongated opening that extends in said first direction and forms an astigmatic lens for producing an electron beam wherein electron paths lying in an imaginary plane extending in said first direction are focused at a point located at a given distance from said target plate on the side of said electron gun and electron paths lying in an imaginary plane at right angles to said first direction are focused substantially on the target plate, said anode compris-

ing an elongated opening that has a major axis extending at substantially right angles to said first direction and that has a minimum width dimension exceeding the width of said grid opening, said anode opening intersecting the first anode face facing said grid so as to form a first aperture and intersecting the second anode face removed from said grid so as to form a second aperture, said second aperture being wider than said first aperture so that said anode opening widens in step-wise manner from said first face to said second face, said anode opening being substantially rectangular at said second anode face.

B 361,347

ELECTRICAL LUMINESCENT DISPLAY DEVICES

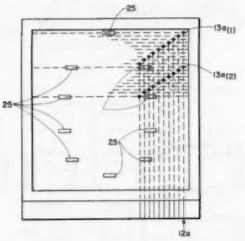
William Michael Coderre; Carl Neil Berglund, both of Ottawa, Ontario, and Philip Robert Tillman, Kanata, Ontario, all of Canada, assignors to Bell-Northern Research Ltd., Ottawa, Ontario, Canada

Filed May 17, 1973, Ser. No. 361,347
Int. Cl. H01j *7/42*
U.S. Cl. 313—514 **8 Claims**
Group Art Unit 256

References Cited

UNITED STATES PATENTS

2,966,616	12/1960	Mash	313/109.5
3,315,248	4/1967	Benn	313/109.5
3,399,402	8/1968	Brown	313/109.5
3,684,918	8/1972	Schmersal	315/169 R
3,753,038	8/1973	Liddle	315/169 TV



1. An electrical luminescent display device comprising:
a substrate and a transparent cover member spaced from the substrate to form an enclosed chamber;
a first grid of electrodes on said substrate;
a first dielectric layer comprising an insulating layer on the electrodes of said first grid;
a second grid of electrodes overlying said first grid;
means connecting each electrode of said first grid to a series of electrodes of said second grid, a different series of electrodes of said second grid connected to each electrode of said first grid;
an electroluminescent fluid in said chamber in contact with the electrodes of said second grid;
a second dielectric layer in overlying relationship with said second grid;
apertures in said second dielectric layer, said apertures aligned with the electrodes of said second grid to form a plurality of predetermined patterns;
an additional electrode electrically connected to the electrodes of said second grid by said electroluminescent fluid;
means for connecting an alternating driving voltage to said additional electrode and to individual electrodes of said first grid.

B 461,872

GAUZE SUPPLY CONDUCTOR IN COIL UNIT FOR A TELEVISION CAMERA TUBE

Benedictus Timotheus Johannes Holman, Emmasingel, Eindhoven, Netherlands

Continuation of Ser. No. 254,627, May 18, 1972, abandoned. This application Apr. 18, 1974, Ser. No. 461,872
Int. Cl. H01j *31/28, 31/38*
U.S. Cl. 315—8 **10 Claims**
Group Art Unit 252

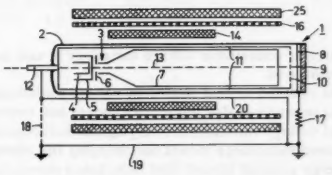
References Cited

UNITED STATES PATENTS

3,286,121	11/1966	Lubszynski	313/65 A X
3,295,009	12/1966	James	315/8

FOREIGN PATENTS OR APPLICATIONS

7,102,201	8/1972	Netherlands	313/65 A



1. A device comprising a tube having a target, a mesh electrode disposed near said target, an interior mesh electrode conductor within said tube and coupled to said mesh electrode, and a signal output impedance element having a first end coupled to said target and a second end, a magnetic focusing coil disposed about said tube, an electromagnetic deflection coil means for generating a line deflection field, said deflection coil being disposed about said tube, said line deflection field having a neutral plane, a helical wire coil of soft magnetic material disposed between said focusing and deflection coils, an external mesh electrode supply conductor disposed in said neutral plane between said tube and said wire coil and having a first end means for coupling said external conductor to said interior conductor and a second end means for connecting said external conductor to said output impedance element second end; whereby said impedance element and said interior and external conductors form a loop that does not enclose said wire coil, thereby minimizing interference voltages between said target and mesh electrode.

B 359,947

VOLTAGE REGULATOR FOR DEFLECTION CIRCUIT

Gerhard Forster, Wuerenlos, and Hans Keller, Horgen, both of Switzerland, assignors to RCA Corporation, Princeton, N.J.

Filed May 14, 1973, Ser. No. 359,947
Claims priority, application Great Britain, May 18, 1972, 23542/72
Int. Cl. H01j *29/70*
U.S. Cl. 315—389 **8 Claims**
Group Art Unit 222

References Cited

UNITED STATES PATENTS

3,351,804	11/1967	Kongable et al.	315/20
3,535,445	10/1970	Griffery	315/20
3,767,960	10/1973	Ahrens	315/27 TD

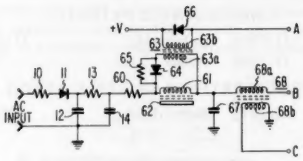
1. A voltage regulator for a deflection circuit including a commutating switch for causing transfer of energy to a commutating network during a first portion of each deflection cycle for supplying energy to a deflection winding during a second portion of each deflection cycle, said regulator comprising:

a direct current voltage source;

first inductance means coupled to said commutating switch;

second variable inductance means coupled to said first inductance means and to said source of direct current voltage;

capacitance means coupled to said second inductance means to form a resonant circuit therewith for coupling energy from said direct current voltage source to said first inductance means;



a source of undesirable voltage variations in said deflection circuit; and

means coupled to said source of voltage variations and to said second variable inductance means and responsive to said voltage variations for varying the inductance of said second inductance means for changing the phase of said energy coupled to said first inductance means for maintaining substantially constant energy in said commutation network from one deflection cycle to another.

B 348,495

DEFLECTION AMPLIFIER

John Andrew Cooksey, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Continuation-in-part of Ser. No. 268,038, June 30, 1972, abandoned. This application Apr. 6, 1973, Ser. No. 348,495

Int. Cl. H01j *29/70*

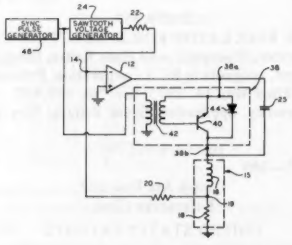
U.S. Cl. 315—408 **5 Claims**

Group Art Unit 222

References Cited

UNITED STATES PATENTS

3,541,385	11/1970	Rothermel	315/27 TD
3,628,083	12/1971	Holmes	315/27 TD
3,714,503	1/1973	West	315/27 TD



1. In combination with an electronic system wherein an amplifier with an input voltage having a variable but generally rising waveform causes a current having the same wave shape to flow through an inductor coil thereby generating a magnetic field to deflect the beam of a CRT, said system having a retrace capacitor to conserve the energy stored in the inductor and a non-reactive feedback path by which a sample of the output signal developed across a resistor is returned to the input circuitry comprising:

switching means operable to connect said retrace capacitor in series with said amplifier and said inductor during retrace time, the current conduction path for the transfer and retransfer of energy between said inductor and capacitor thereby being through said amplifier; and further operable to disconnect said retrace capacitor such that the said amplifier output is connected directly to said inductor during trace time; and

synchronizing means operable to control the time of start of said input voltage waveform and the operation of said switching means.

B 303,011

COMPLETELY INSULATED HIGH-VOLTAGE SWITCHING SYSTEM

Willi Olsen, and Manfred Lieske, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Nov. 2, 1972, Ser. No. 303,011

Claims priority, application Germany, Nov. 12, 1971, 2157102

Int. Cl. H02b *1/20*

U.S. Cl. 317—103 **5 Claims**

Group Art Unit 212

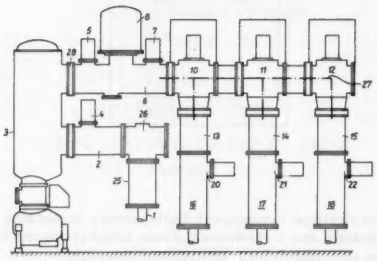
References Cited

UNITED STATES PATENTS

3,235,774	2/1966	Frowein	317/103
3,405,325	10/1968	Beuckner	317/103
3,527,911	9/1970	Sharp	317/103
3,578,927	5/1971	Roth	200/148 R

FOREIGN PATENTS OR APPLICATIONS

1,230,115	12/1966	Germany	200/148 R
1,690,739	2/1971	Germany	



1. In a completely insulated high-voltage switching system having a bus-bar fed through a power circuit breaker, a plurality of disconnect switches for connecting a corresponding plurality of branch lines to the bus-bar and for disconnecting the same during a currentless interval caused by a short opening of the power circuit breaker, each of the disconnect switches having first and second connecting conductors, the second connecting conductor being connected to a corresponding one of the branch lines; the improvement comprising the arrangement wherein the first connecting conductor of each of the disconnect switches is directed toward the breaker and is disposed to define a right angle with respect to the second conductor thereof, the first connecting conductors of the disconnect switches being arranged in a straight line to conjointly define the bus-bar, said second connecting conductors being in one plane and the power circuit breaker forming a common plane with the disconnect switches.

B 280,395

ELECTROLYTIC CAPACITOR HAVING AN INTERGRATED SPACER SYSTEM

Robert S. Alwitt, Lee Terrace, and Sidney D. Ross, Colonial Ave., both of Williamstown, Mass. 01267

Filed Aug. 14, 1972, Ser. No. 280,395
Int. Cl. H01g 9/02
U.S. Cl. 317—230 4 Claims
Group Art Unit 254

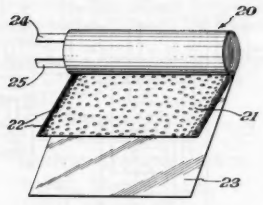
References Cited

UNITED STATES PATENTS

2,018,522	10/1935	Herrmann et al.	317/230 X
2,031,128	2/1936	Raines	317/230

FOREIGN PATENTS OR APPLICATIONS

447,639	5/1936	Great Britain	317/230



1. An electrolytic capacitor comprising a capacitance section of convolutely wound electrodes, said electrodes being a formed anode foil electrode of a valve metal, and a cathode contact foil electrode having a substantially non-continuous spacer consisting essentially of inert thermoplastic particles sintered onto at least one major surface thereof separating said anode and said cathode foil electrodes, said spacer particles covering from 1-20% of the total cathode surface area and having a greater particle density along the edges of said cathode foil electrode than elsewhere thereon, and an electrolyte in contact with said electrodes through said spacer.

4. An electrolytic capacitor comprising: a capacitance section of convolutely wound electrodes, said electrodes being an aluminum foil anode electrode having an oxide film formed thereon, and a cathode contact foil electrode having a substantially non-continuous spacer consisting essentially of inert, non-conducting epoxy particles sintered onto both major surfaces thereof and separating said anode and said cathode, said spacer particles having a thickness in the range of 0.0005 to 0.005 inch and covering about 10% of the total cathode surface area with a greater particle density along the edges of said cathode foil electrode than elsewhere thereon; and an electrolyte in contact with said electrodes through said spacer.

B 352,950

ELECTRICAL SYSTEMS AND APPARATUS

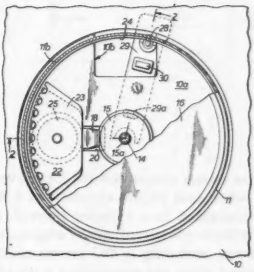
Anthony Charles Warren, 37 Hinton Rd., Fulbourne, Cambridgeshire, and Bryan Frederick Nicholls, 25 The Drive, Northampton, both of England

Filed Apr. 20, 1973, Ser. No. 352,950
Claims priority, application Great Britain, Apr. 20, 1972, 18389/72; Oct. 4, 1972, 45684/72
Int. Cl. H02k 29/00
U.S. Cl. 318—138 8 Claims
Group Art Unit 217

References Cited

UNITED STATES PATENTS

3,230,434	1/1966	Bauerlein	318/254 X
3,331,005	7/1967	Lear et al.	318/254
3,586,942	6/1971	McMahan	318/254
3,634,873	1/1972	Nishimura	318/254
3,678,359	7/1972	Peterson	318/254
3,683,248	8/1972	Kobayashi et al.	318/254 X
3,706,923	12/1972	Dunfield	318/254



1. An electric motor comprising a rotor mounted for rotation about an axis and including a ring of material containing permanent magnetic material bonded by a plastics material to provide a number of magnetic poles of alternately opposite polarity disposed annularly about the axis of rotation of the rotor;

a stator assembly comprising a coil and two plates of magnetic material containing therebetween said coil, each plate having one edge provided with fingers forming stator pole faces, and the fingers of the plate being interdigitated whereby, when the coil is energised, stator poles of alternately opposite polarity are produced which cooperate with the magnetic poles of the rotor to drive the motor, said edge being situated opposite a portion only of the circumference of the ring of permanent magnetic material;

rotor position sensor means disposed adjacent the ring of permanent magnetic material in a position displaced from the stator assembly in a direction peripheral of said rotor and arranged to respond to the poles of the rotor during rotation to derive an electrical signal in accordance with the rotation of the rotor; and

control means responsive to said signal for controlling energisation of said coil and the rotation of the rotor.

B 415,977

ENGINE STARTER MOTOR CONTROL FOR PREVENTING DAMAGE DURING HYDRAULIC LOCK

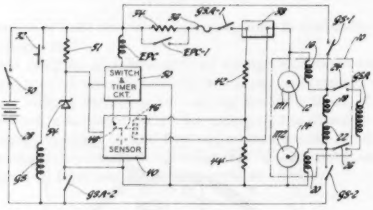
Stephen S. Chen, Downers Grove, Ill., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 15, 1973, Ser. No. 415,977
Int. Cl. H02p 7/14
U.S. Cl. 318—434 2 Claims
Group Art Unit 217

References Cited

UNITED STATES PATENTS

2,925,810	2/1960	Mendenhall	290/38 R X
3,469,106	9/1969	Seilly	290/38 R
3,551,775	12/1970	Safiuddin	318/434
3,609,383	9/1971	Welsh	290/38 R



2. An engine starter motor control for preventing damage to an engine when said engine experiences a hydraulic lock due to fluid contained in a cylinder thereof, comprising: a starter motor effective for cranking the engine; a starter motor energizing circuit including a DC power source, a parallel circuit comprised of an impedance and a speed control contacter, and a starter contacter series coupled with the starter motor, the starter motor being coupled directly to the DC power source when the starter contacter and the speed control contacter are closed so as to crank the engine at maximum speed with maximum applied torque and being coupled to the DC power source through the starter contacter and the impedance when the speed control contacter is opened so as to crank the engine at a rate below a specified speed at which the applied torque is insufficient to rotate the engine when said engine experiences a hydraulic lock; means for generating a first signal directly related to the magnitude of current through the starter motor; means for generating a second signal directly related to the magnitude of the voltage across the starter motor; means responsive to the first and second signals for generating a third signal having a magnitude directly related to the speed of the starter motor; means responsive to the third signal for closing the contacter when the magnitude of said signal represents a speed of the starter motor less than specified speed and opening the contacter when the speed is greater than the specified speed; and timer means for disabling the last mentioned means from opening the contacter when the speed of the starter motor is greater than the specified speed after a predetermined time duration from the closing of the starter contacter, said time duration being at least equal to the time required for the starter motor when operating at the specified speed to rotate the engine through one complete revolution, whereby the starter motor cranks the engine at or below the specified speed for the specified time duration with an applied torque insufficient to rotate the engine when said engine experiences a hydraulic lock.

B 380,310

SOLID STATE CONTROL FOR HOSPITAL BED MOTORS

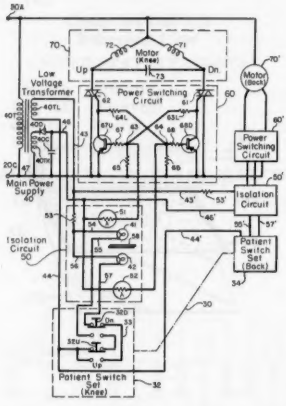
Kenneth W. Padgitt, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 187,725, Oct. 8, 1971,. This application July 18, 1973, Ser. No. 380,310
Int. Cl. H02p 7/74
U.S. Cl. 318—480 1 Claim
Group Art Unit 217

References Cited

UNITED STATES PATENTS

3,094,713	6/1963	Wise	5/67
3,309,587	3/1967	Meng	318/480 X
3,336,482	8/1967	Mierendorf et al.	250/229
3,465,373	9/1969	Wilson	5/68
3,528,103	9/1970	Wolf	318/207 R
3,588,512	6/1971	Hollien	250/229 X
3,641,413	2/1972	Ohntrup	318/480
3,697,846	10/1972	Mueller	318/547 X
3,728,606	4/1973	Finnegan	318/480



1. In an adjustable motorized hospital bed of the type having articulated panels positioned by at least one reversible electric motor having forward and reverse winding coils, a solid state control system for controlling the application of a relatively high voltage a.c. mains to the winding coils to effect rotation of the motor in either clockwise or counterclockwise direction, comprising:

first and second triacs each having first and second main terminals and a gate terminal;

a first series circuit, including the forward winding coil and the first and second main terminals of said first triac, coupled across the a.c. mains;

a second series circuit, including the reverse winding coil and the first and second main terminals of said second triac, coupled across the a.c. mains;

a first voltage divider, including a first photosensitive element, coupled to the gate terminal of said first triac and normally applying to that gate terminal a voltage of an amplitude insufficient to turn said first triac ON and render it conductive;

a second voltage divider, including a second photosensitive element, coupled to the gate terminal of said second triac and normally applying to that gate terminal a voltage of an amplitude insufficient to turn said second triac ON and render it conductive;

first and second light emitters each of which is optically coupled to, but electrically isolated from, a respective one of said first and second photosensitive elements;

a source of relatively low voltage;

a hand-held, patient operated control unit having first and second manually actuated switches each of which, when actuated, couples said low voltage source to a respective one of said light emitters to effect illumination thereof,

the resistance of said first photosensitive element decreasing in response to the illumination of said first light emitter to effect an increase in the voltage applied to the gate terminal of said first triac thereby turning the first triac ON and coupling the high voltage a.c. mains to the forward winding coil to cause the motor to rotate in the clockwise direction,

the resistance of said second photosensitive element decreasing in response to the illumination of said second light emitter to effect an increase in the voltage applied to the gate terminal of said second triac thereby turning the second triac ON and coupling the high voltlage a.c. mains to the reverse winding coil to cause the motor to rotate in the counterclockwise direction;

means, operable when said first photosensitive element is activated by light from said first light emitter, for preventing said second triac from conducting;

and means, operable when said second photosensitive element is activated by light from said second light emitter, for preventing said first triac from conducting.

B 368,397

PRECISION MOTION CONTROL DEVICE OR THE LIKE

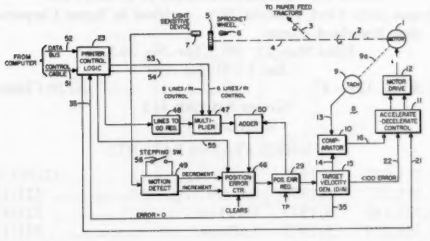
Robert W. MacWade, 3661 Morrell Ave., Philadelphia, Pa. 19114, and Bernard J. McDevitt, 335 Oxford Rd., Norristown, Pa. 19403

Filed June 8, 1973, Ser. No. 368,397
Int. Cl. G05b *13/00*
U.S. Cl. 318—561 **9 Claims**
Group Art Unit 217

References Cited

UNITED STATES PATENTS

3,673,977	7/1972	Hendley	318/640 X
3,721,882	3/1973	Helms	318/594
3,728,668	4/1973	Brette	318/617 X
3,731,177	5/1973	Commander et al.	318/561 X



1. A paper advance mechanism for a high speed printer, comprising a servo means for moving the printer paper, a sprocket generator coupled to said servo means adapted to generate a multiplicity of sprocket pulses for each line of paper advance, a counter for storing a count which is a predetermined multiple of the lines of paper advance, a register means coupled to said counter for receiving the count stored in said counter, a digital-to-analog converter coupled to said register means for developing an error voltage dependent on the count stored in the register means and for applying said error voltage to said servo means to cause said servo to advance paper, an adder network having two inputs thereto and a summing output, one of said adder inputs being connected to the output of said register means, an input means connected to the other adder input for applying a count signal indicative of the number of lines of paper advance that is to be executed, the summing output of said adder being connected to the input to said counter to load said counter with a count at the start of a paper advance operation, and means utilizing the output of said sprocket pulse generator to decrement said counter as paper is advanced.

B 409,657

RECTIFIER CIRCUIT FOR PROVIDING SIX-PHASE RECTIFICATION OF THREE-PHASE ALTERNATING CURRENT

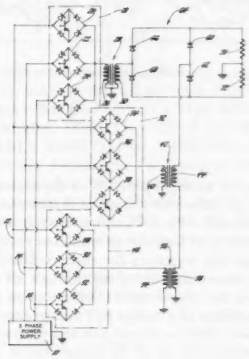
Roger F. Brewster, Santa Barbara, Calif., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 25, 1973, Ser. No. 409,657
Int. Cl. H02m *7/20*
U.S. Cl. 321—5 **4 Claims**
Group Art Unit 212

References Cited

UNITED STATES PATENTS

1,712,502	5/1929	Jonas	321/5
1,712,569	5/1929	Kubler	321/5
3,308,368	3/1967	Schmidt, Jr.	321/9 R
3,707,665	12/1972	Gyugyi	321/69 R X
3,707,667	12/1972	Gyugyi	321/5
3,772,601	11/1973	Smith	321/5 X



1. A rectifier circuit for converting a three-phase alternating signal output from a three-phase supply to a six-phase rectified unidirectional signal comprising: first, second and third phase selector means coupled to the three-phase supply, each of the phase selector means sequentially coupling each phase of the three-phase alternating signal to its output in 60 electrical degree segments, each phase of the three-phase alternating signal being coupled to the output of a respective one of the phase selector means at any instant in time and means coupled to the outputs of the first, second and third phase selector means for combining the positive 60 electrical degree segments coupled to the outputs of the first, second and third phase selector means and combining the negative 60 electrical degree segments coupled to the outputs of the first, second and third phase selector means, whereby the combined positive and negative segments comprise a six-phase unidirectional signal.

B 432,424
CONVERTER ARRANGEMENT

Erwin Keyl; Helmut Ruthe, both of Erlangen, and Gerd Thiele, Erlangen-Frauenaurach, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jan. 10, 1974, Ser. No. 432,424
Claims priority, application Germany, Jan. 12, 1973, 2301570
Int. Cl. H02m *1/00*
U.S. Cl. 321—8 C **5 Claims**
Group Art Unit 212

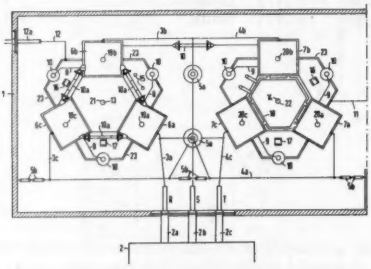
References Cited

UNITED STATES PATENTS

3,398,349	8/1968	Evans et al.	321/27 R
3,496,445	2/1970	Boksjo et al.	321/11
3,504,268	3/1970	Hoffmann et al.	321/11
3,586,959	6/1971	Eccles et al.	321/11
3,654,543	4/1972	Isogai et al.	321/27 R

FOREIGN PATENTS OR APPLICATIONS

1,264,910	2/1972	Great Britain	321/8 R



1. In a converter having a plurality of thyristors arranged in a bridge circuit and in which groups of thyristors connected in series to form a part of a half bridge branch are stacked in levels and combined to form an air insulated rectifier with the ignition cable of the thyristors for each rectifier being common for all thyristors and being led through all levels of the rectifier wherein the improvement comprises an arrangement in which the rectifiers of a bridge half are arranged essentially in star like fashion about a central axis and wherein a common ignition cable return for all of the bridge half is provided.

B 419,327
DIRECT CURRENT POWER CONVERTER

Sandor J. Horvath, 4556 D St., Philadelphia, Pa. 19120, assignor to Eltra Corporation

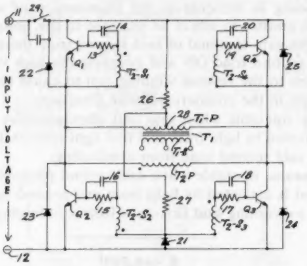
Filed Nov. 27, 1973, Ser. No. 419,327
Int. Cl. H02m *3/32*
U.S. Cl. 321—18 **3 Claims**
Group Art Unit 212

References Cited

UNITED STATES PATENTS

3,119,057	1/1964	Wilson	321/45 R X
3,343,062	9/1967	Mesenhimer	321/45 R X
3,602,794	8/1971	Westhaver	323/22 T X
3,652,916	3/1972	Ballman	320/40 X
3,671,843	6/1972	Huntzinger	320/40 X

1. A voltage converter for operating from a DC power supply having a regulated DC output voltage of a value different from the supply voltage, comprising, in combination, a power transformer having primary and secondary windings, oscillator means for connecting said primary winding to said power supply, said oscillator means including a full wave transistor bridge connecting said primary winding alternately in opposite polarity to said power supply for inducing an alternating current at a different voltage in said secondary winding and a saturable reactor having a primary winding connected in parallel with said power transformer primary winding and having a plurality of secondary windings connected to control conduction of current control transistors in said transistor bridge, means for rectifying said induced secondary current and applying the rectified voltage across a pair of load terminals, and regulator means for monitoring the voltage across said load terminals for deactivating said oscillator



means when such voltage exceeds a predetermined maximum value and for activating said oscillator means when such voltage drops below a predetermined minimum value, said regulator means including voltage responsive electronic switch means having an input connected across said load terminals and an output operably connected to a means effective to disable said oscillator means, such that variations in such load terminal voltage above or below said predetermined maximum or minimum values will cause said switch means to change from one state to another to deactivate and activate said oscillator means.

B 363,457
HIGH POWER REGULATED D. C. SUPPLY

Bruno John Vieri, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 23, 1973, Ser. No. 363,457
Int. Cl. H02m *7/52*
U.S. Cl. 321—47 **10 Claims**
Group Art Unit 212

References Cited

UNITED STATES PATENTS

3,211,985	10/1965	Torok	321/47 X
3,518,527	6/1970	Russell	321/18
3,733,540	5/1973	Hawkins	321/47
3,735,239	5/1973	LaDuca	321/16
3,745,439	7/1973	Belmuth	321/47 X

1. In a regulated AC to DC converter including a pair of controlled rectifiers which are triggered into conduction selectively during the positive and negative half cycles of the alternating current, an imporved triggering means comprising: a monostable multivibrator for providing a train of output pulses,

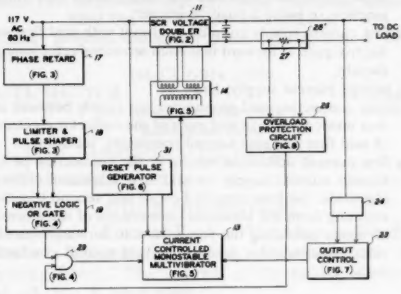
means for driving said multivibrator to generate said train of output pulses in predetermined phase relation to the alternating current,

means responsive to the trailing edges of said output pulses for providing a train of trigger pulses,

means for actuating said controlled rectifiers into conducting states selectively in response to said train of trigger pulses, and

means for providing a control current to said multi-vibrator for controlling the width of the output pulses so as to

control the time position of the trigger pulses relative to the phase of the alternating current, whereby the duration


117 V AC 60 Hz
SCR VOLTAGE DOUBLER (FIG. 2)
TO DC LOAD
PHASE RETARD (FIG. 3)
(FIG. 5)
OVERLOAD PROTECTION CIRCUIT (FIG. 8)
LIMITER & PULSE SHAPER (FIG. 3)
RESET PULSE GENERATOR (FIG. 6)
NEGATIVE LOGIC OR GATE (FIG. 4)
CURRENT CONTROLLED MONOSTABLE MULTIVIBRATOR (FIG. 5)
OUTPUT CONTROL (FIG. 7)
(FIG. 4)

of the conduction of the controlled rectifiers in the corresponding half cycle of the alternating current is controlled.

B 428,795

FREQUENCY MULTIPLIER CIRCUIT

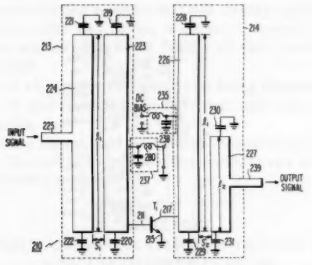
Donald Edwin Mahoney, Hightstown, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 27, 1973, Ser. No. 428,795
Int. Cl. H02m *5/16*
U.S. Cl. 321—69 NL **12 Claims**
Group Art Unit 254

References Cited

UNITED STATES PATENTS

3,479,615	11/1969	Garver	328/16 X
3,582,760	6/1971	Sun	321/69 NL
3,713,014	1/1973	Wagner	321/69 NL



1. A frequency multiplier comprising:

first, second, third and fourth transmission line center conductors each having means for capacitively coupling opposite center conductors ends to a common reference potential, said first and second center conductors being capacitively coupled to each other and said third and fourth center conductors being capacitively coupled to each other; and

a semiconductor device responsive to an input signal at an input frequency and D.C. bias signals for generating an output signal at a frequency harmonically related to said input frequency, said device having a predetermined input and output impedance, said device having a first terminal coupled to said second center conductor, a second terminal coupled to said reference potential and a third terminal coupled to said third center conductor, said first and second center conductors being arranged to match said input impedance of said device at said input frequency, said third and fourth center conductors being mutually arranged to match said output impedance of said device at said desired signal frequency with said third conductor providing a relatively low impedance path to said reference potential at said input frequency and said fourth center conductor being resonant at said desired signal frequency.

9. An oscillator comprising:

first, second and third transmission line center conductors each having means for capacitively coupling opposite center conductor ends to a reference potential, said second and third center conductors being capacitively coupled to each other;

a semiconductive device responsive to D.C. bias signals for generating an input signal at an input frequency and a desired signal at a frequency harmonically related to said input frequency, said device having a predetermined input and output impedance, said device having a first terminal coupled to said first center conductor, a second terminal coupled to said reference potential and a third terminal coupled to said third center conductor, said second and third center conductors being mutually arranged to match said output impedance of said device at said desired signal frequency with said second center conductor providing a relatively low impedance path to said reference potential at said input frequency and said third center conductor being resonant at said desired signal frequency; and

means for providing a path for signals at said input frequency from said first center conductor to said second center conductor.

B 308,892

INDUSTRIAL GAS TURBINE POWER PLANT CONTROL SYSTEM HAVING CAPABILITY FOR EFFECTUATING AUTOMATIC FUEL TRANSFER UNDER LOAD PREFERABLY EMPLOYING A DIGITAL COMPUTER

John F. Reuther, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 205,263, Dec. 6, 1971. This application Dec. 21, 1972, Ser. No. 308,892
Int. Cl. H02p *8/04*
U.S. Cl. 322—15 **9 Claims**
Group Art Unit 217

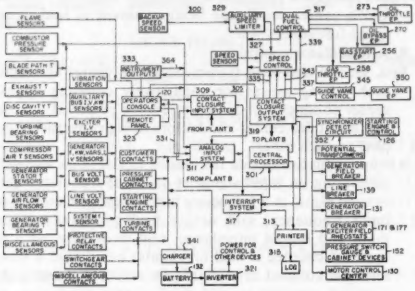
References Cited

UNITED STATES PATENTS

3,382,672	5/1968	French	60/39.28
3,469,395	9/1969	Spitsberg	60/39.28
3,482,396	12/1969	Nelson et al.	60/39.28
3,552,872	1/1971	Giras et al.	290/40
3,588,265	6/1971	Berry	415/1
3,606,754	9/1971	White	60/39.28
3,643,437	2/1972	Brinbaum	290/40
3,678,691	7/1972	Shohet	60/39.28
3,688,495	9/1972	Fehler	60/39.26
3,733,816	5/1973	Nash et al.	60/39.28

1. A gas turbine electric power plant comprising a gas turbine having a compressor and combustion and turbine elements, a generator having a field winding and being coupled to said gas turbine for drive power, a fuel system having plural subsystems for supplying one or more fuels to the gas turbine combustion elements, means for exciting said generator field winding, means for cooperatively operating each of said fuel subsystems to energize said turbine and for controlling said exciting means, a control system for developing one or more fuel system control signals, said control system including a digital computer, an input/output system therefor, and associated external circuit means, said circuit means comprising at

least fuel system control signal ratioing means having one or more circuit parameters capable of continuous variation, means for operating said computer to determine a total fuel demand signal value and a time varying ratio of individual fuels necessary to continuously satisfy said total fuel demand



while changing from operation on one of said fuels to operation on another of said fuels, and means for developing a fuel demand signal corresponding to said determined total fuel demand value and for applying said signal across said fuel signal ratioing means to derive individual control inputs to each of said plural fuel subsystem operating means.

B 403,990

CURRENT PROPORTIONING CIRCUIT

Arthur John Leidich, Flemington, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 5, 1973, Ser. No. 403,990

Int. Cl. G05f *3/08*

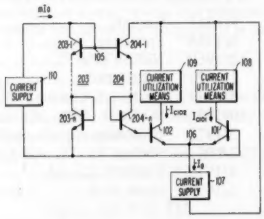
U.S. Cl. 323—4 **7 Claims**

Group Art Unit 212

References Cited

UNITED STATES PATENTS

3,532,909	10/1970	Buckley	323/1 UX
3,689,752	9/1972	Gilbert	328/160 X
3,740,658	6/1973	Loving	330/23
3,757,137	9/1973	Ahmed	330/30 D



1. In combination:

first and second transistors, each having base and emitter electrodes with a base emitter junction therebetween and each having a collector electrode, their emitter electrodes being joined at a first interconnection;

first and second conductive paths connecting respective ones of the base electrodes of said first and said second transistors to a second interconnection;

2*n* semiconductor diodes, n of which are included in said first conductive path without other substantial intervening elements and poled for serial forward conduction with said first transistor base-emitter junction, and n others of which are included in said second conductive path without other substantial intervening elements and poled for serial conduction with said second transistor base-emitter junction, n being a positive integer;

a first current supply coupled in circuit with said first conductive path to forward bias each semiconductor junction therein;

a second current supply; and

means connecting said second current supply between said first interconnection and each of the collector electrodes of said first and said second transistors, including:

a first current utilization means in the connection of said second current supply to said first transistor collector electrode, the base current flow of said second transistor resulting from the aforesaid connections of the aforesaid elements providing the sole means to forward bias each said semiconductor junction in said second conductive path.

B 345,527

SWITCH OPERATING DEVICE

Koji Kodama, 909, 4-1 2-chome, Amanuma, Suginami-ku, Tokyo, and Yujiro Kasai, 2016 Shin-machi, Ohme-shi, Tokyo, both of Japan

Filed Mar. 28, 1973, Ser. No. 345,527

Claims priority, application Japan, Mar. 31, 1972, 47-32465

Int. Cl. G05f *5/00*

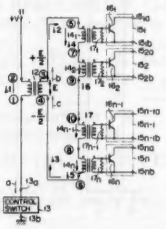
U.S. Cl. 323—48 **8 Claims**

Group Art Unit 212

References Cited

UNITED STATES PATENTS

3,356,931	12/1967	Welty et al.	323/48
3,601,690	8/1971	Judson et al.	323/48



4. A switch operating device comprising a driving transformer having the input side thereof supplied with switching current; a first plurality of switching transformers whose primary sides are serially connected between one inout terminal of said driving transformer and the source of said switching current, a second plurality of switching transformers whose primary sides are serially connected between the output terminals of said driving transformer; and a plurality of switching circuits connected to the secondary sides of said first and second plurality of switching transformers.

B 402,555
COLD SPOT DETECTOR FOR LNG TANKS AND TANKERS

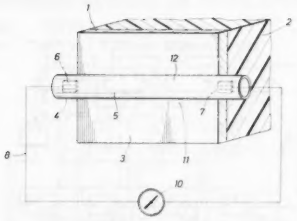
Yaacov Lev, 59 Dovedale Rd., Liverpool, Lancashire, England
Filed Oct. 1, 1973, Ser. No. 402,555
Claims priority, application Great Britain, Oct. 4, 1972, 45692/72
Int. Cl. G01n *27/00*
U.S. Cl. 324—71 R **17 Claims**
Group Art Unit 258
References Cited

UNITED STATES PATENTS

3,510,762 5/1970 Leslie 324/52

OTHER PUBLICATIONS

Horne, R. A., Courant R. A., "The Electric Conductivity of Aqueous Electrolytic Solutions near the Freezing Point," The Journal of Physical Chemistry, Vol. 68, No. 5, May 1964.



1. An apparatus for detecting a failure in a cold insulating system comprising:

an electrically non-conducting conduit, said conduit being disposed in cold transfer relation with said cold insulating system;

an ion-conducting material that will solidify under action of induced cold and having a different conductivity when solid, said conduit being filled with said ion-conducting material;

a pair of electrodes, one electrode being disposed at each end of said conduit in contact with said ion-conducting material; and

monitoring means, said monitoring means being coupled to said electrodes to monitor the conductivity of said ion-conducting material.

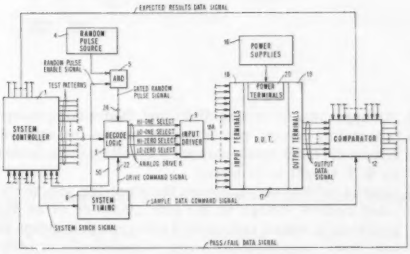
B 394,712
METHOD AND APPARATUS FOR TESTING HIGH CIRCUIT DENSITY DEVICES

Michael Joseph Patti, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 6, 1973, Ser. No. 394,712
Int. Cl. G04r *31/00*
U.S. Cl. 324—73 R **30 Claims**
Group Art Unit 258
References Cited

UNITED STATES PATENTS

3,253,134	5/1966	North, Jr.	324/73 X
3,490,041	1/1970	Shapiro et al.	324/73
3,614,608	10/1971	Giedd et al.	324/73
3,621,387	11/1971	Smith et al.	324/73

1. An electronic test system for testing high density logic networks having n input terminals and m output terminals, where n and m are integer numbers respectively greater than ten, said system employing test patterns under control of a system test program, where each test pattern includes a plurality of test steps and each test step includes n discrete electrical manifestations of logical ones and/or logical zeros, said test system comprising: a system controller operative under control of said test program for providing test pattern data, including said n discrete electrical manifestations, during each of said test steps, said system controller including storage means for storing Test Patterns, Expected Test Result Data and Pass/Fail Test Data; first circuit means responsive to said system controller for accepting, during each test step, said n discrete electrical manifestations of logical ones and/or logical zeros, second circuit means responsive to said first circuit means for randomly rendering either a first or a second discrete electrical manifestation representative of each of said logical ones and/or either a first or a second discrete electrical manifestation representative of each of said logical zeros; third circuit means coupled to said second circuit means and said n input terminals of the high density logic network under test for impressing on each of said n input terminals either said first or second discrete electrical manifestation of a logical one where said test pattern step designates a logical one be applied to said terminal, or said first or second discrete electrical manifestation of a logical zero where said test pattern step designates a logical zero be applied to said terminal; fourth means coupled to said *m* output terminals of said high density



logic network under test and to said system controller, for accepting and comparing during each test step the output of said high density logic network and the Expected Results Data from said System Controller, said fourth means rendering to said system controller Pass/Fail Test Data relative to the high density logic network under test.

26. In a tester for testing large scale integration devices having *m* input terminals, where *m* is an integer greater in magnitude than 10, said tester including: first means for providing m electrical manifestations; second means cooperating with said first means for randomly applying a first electrical manifestation, or a second electrical manifestation, on each of certain ones of said m input terminals; third means cooperating with said first means for randomly applying a third electrical manifestation, or a fourth electrical manifestation on each of the remaining ones of said m input terminals; and additional means cooperating with said first, second and third means for sensing and storing data indicative of exactly which one of said four electrical manifestations has been impressed on each of said m terminals.

B 337,703
SCR AND DIODE TESTER

Robbie E. Shelnutt, Route 3, Carrollton, Ga. 30117

Filed Mar. 2, 1973, Ser. No. 337,703
Int. Cl. G01r 31/22, 1/36
U.S. Cl. 324—158 D 4 Claims
Group Art Unit 258

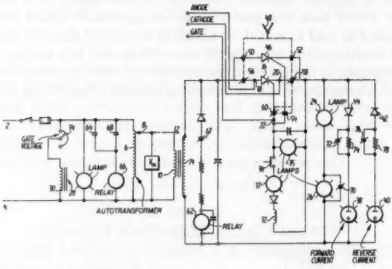
References Cited

UNITED STATES PATENTS

2,895,106	7/1959	Taunt	324/158 D
3,193,766	7/1965	Fleming	324/158 SC
3,478,264	11/1969	Tsergas	324/158 SC
3,676,767	7/1972	Boelter	324/158 D

OTHER PUBLICATIONS

Hopkins, T. E., "SCR TESTER," Electronics World, Jan. 1964, pg. 56.



1. An apparatus for testing SCRs and diodes comprising:
a. alternating-current power supply means for supplying selectively rated anode-cathode a.c. voltages to a diode or an SCR sought to be tested;
b. control voltage supply means for supplying selectively a rated control voltage to the gate electrode of an SCR sought to be tested, said control voltage supply means and said power supply means being independently variable;
c. an SCR having known characteristics;
d. connection means including switch means having (1) a first position for connecting, via a given circuit within the apparatus, said alternating-current power supply means to the anode-cathode circuit of said SCR having known characteristics and for connecting said control voltage supply means to its gate electrode, and having (2) a second position for connecting, via said given circuit within the apparatus, said power supply means to the anode-cathode circuit of a diode or an SCR sought to be tested;
e. first indicator means coupled to said switch means for indicating whether the diode or SCR sought to be tested operates properly in response to said rated voltages when said switch means is in said second position;
f. second indicator means coupled to said switch means for indicating whether the diode or SCR sought to be tested is forwardly or reversely biased, when said switch means is in said second position, said first indicator means and said second indicator means indicating whether the apparatus is properly operating when said switch means is in its first position; and
g. overload protection means for protecting said first and second indicator means when said power supply means supplies a voltage above a given level by connecting additional impedance in series with said first and second indicator means whereby said apparatus continues to operate in a normal fashion.

B 407,357
BASE TWO EXPONENTIAL COUNTER

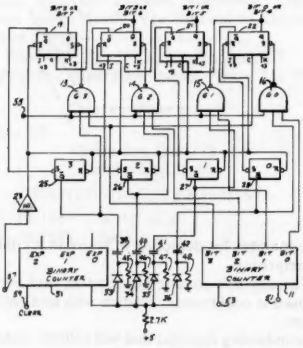
Joshua L. Segal, Chelmsford, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 17, 1973, Ser. No. 407,357
Int. Cl. H03k 21/18
U.S. Cl. 328—51 1 Claim
Group Art Unit 254

References Cited

UNITED STATES PATENTS

3,430,201	2/1969	Kintner	235/92 CC
3,571,576	3/1971	Satterfield	235/92 CC
3,594,560	7/1971	Stanley	340/347 DD
3,646,371	2/1972	Flad	328/51 X
3,657,658	4/1972	Kubo	328/48 X



1. A base two exponential counting circuit comprising:
a. a first plurality of flip-flops, each having set and reset input terminals and a complement terminal;
b. a plurality of AND gates having the outputs thereof connected one each to the set terminals of the plurality of flip-flops, the plurality of AND gates each having a terminal for applying strobe pulses thereto;
c. a second plurality of flip-flops activated by one each of the first plurality of flip-flops, the outputs of the second plurality of flip-flops being connected to one each of the plurality of AND gates for inhibiting said gates;
d. a first binary counter having a plurality of bit outputs, one bit each connected to one of the plurality of AND gates;
e. a plurality of capacitors connected to one each of the outputs of the second plurality of flip-flops;
f. a plurality of steering diodes having one terminal connected to one each of the plurality of capacitors;
g. a plurality of grounded resistors interposed one each between the plurality of capacitors and the plurality of steering diodes; and
h. a second binary counter having an input terminal connected to the plurality of steering diodes, the outputs of the second binary counter representing an exponent count.

B 351,863

SWITCHING ARRANGEMENT FOR PICKING UP STORED CONSTANT VOLTAGES

Olaf Allner, Berlin, Germany, assignor to Loewe Opta GmbH, Kronach, Germany

Filed Apr. 17, 1973, Ser. No. 351,863
Claims priority, application Germany, May 4, 1972, 2221773
Int. Cl. H03b 3/04; H03j 3/04, 5/02
U.S. Cl. 328—141 5 Claims
Group Art Unit 254

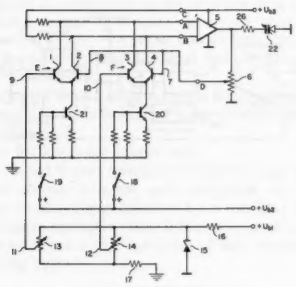
References Cited

UNITED STATES PATENTS

3,528,043	9/1970	Richter et al.	334/15 X
3,588,752	6/1971	Hirshfield	334/15 X
3,593,044	7/1971	McNeilly	307/320 X
3,617,855	11/1971	Hisatsu	330/30 D
3,617,916	11/1971	Smith	307/242 X
3,684,977	8/1972	Viles	334/15 X
3,699,455	10/1972	Kruszewski et al.	334/15 X
3,750,028	7/1973	Uchida	334/15 X

FOREIGN PATENTS OR APPLICATIONS

782,740	9/1957	Great Britain	328/155
1,065,907	4/1967	Great Britain	334/11



1. In a circuit arrangement for recalling stored constant DC voltages for tuning a circuit via a capacitance-diode wherein the tuning voltages for the capacitance diode are adapted to be picked off by means of a plurality of an adjustable voltage storers, the improvement which comprises, in combination, a common differential amplifier whose output is coupled to the capacitance diode a plurality of adjustable further differential amplifiers each associated with a voltage storer and operable when conditioned for exciting the common differential amplifier, each further differential amplifier having first and second inputs and at least one output connected to the common differential amplifier, first means for connecting the first input of each further differential amplifier to the output of the associated voltage storer, second means for connecting the output of the common differential amplifier to the second input of each further differential amplifier, and means for independently conditioning each of the respective further differential amplifiers for operation.

B 309,681

SAMPLING OSCILLOSCOPE CIRCUIT

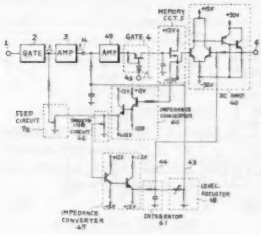
Naohisa Nakaya, Tokyo, Japan, assignor to Iwasaki Tsushinki Kabashiki Kaisha (a/k/a) Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1972, Ser. No. 309,681
Claims priority, application Japan, Nov. 29, 1971, 48-95236
Int. Cl. G11c 11/24; H03k 5/00, 17/60
U.S. Cl. 328—151 6 Claims
Group Art Unit 254

References Cited

UNITED STATES PATENTS

3,474,259	10/1969	Rogers	307/246 X
3,564,289	2/1971	Smith-Saville	307/246
3,586,880	6/1971	Fitzwater	307/246 X
3,594,589	7/1971	Hall	307/246 X
3,600,693	8/1971	Van Den Berg	307/246
3,610,958	10/1971	Reiling	307/246 X
3,659,117	4/1972	Caveney et al.	307/246 X
3,675,135	7/1972	Weller	307/246
3,701,909	10/1972	Holmes et al.	307/246
3,702,944	11/1972	Shigaki	307/246
3,731,117	5/1973	Everest et al.	307/246 X



1. A sampling circuit for a sampling oscilloscope comprising:

a. a sampling gate circuit provided with input means for receiving an input signal to be sampled;

b. a sampling pulse generator connected to said sampling gate circuit for applying narrow sampling pulses thereto whereupon said sampling gate circuit gates the input signal to provide input signal samples as an output signal thereof;

c. an amplifier receptive of the input signal samples from said sampling gate circuit;

d. another gate circuit AC-coupled with an output of said amplifier for receiving the input signal samples;

e. a gate pulse generator receptive of sampling pulses developed by said sampling pulses generator for developing gate pulses in synchronism with the sampling pulses and applying said gate pulses to said another gate circuit for enabling said another gate circuit;

f. a memory circuit receptive of an input signal sample from said another gate circuit when said other gate circuit is enabled for storing the input signal sample until a subsequent input signal sample is applied thereto;

g. An output amplifier receptive of an input signal sample from said memory circuit and having output means for providing an output signal thereat;

h. feed circuit means receptive of the input signal sample from said memory circuit for developing a first signal proportional to the input signal sample and for developing a second signal proportional to the input signal sample where the first signal and the second signal are of the same proportion of the input signal sample;

i. means for applying the first signal to said another gate circuit when a subsequent input signal sample is applied to said memory circuit; and

j. means for subtracting the second signal from an input signal sample applied to said output amplifier.

B 411,356

STAIRCASE WAVEFORM GENERATOR

Hugo Logemann, Jr., Concord, Mass., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 31, 1973, Ser. No. 411,356

Int. Cl. H03k *4/02*

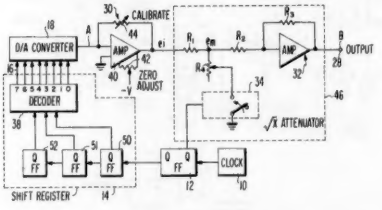
U.S. Cl. 328—186 **10 Claims**

Group Art Unit 254

References Cited

UNITED STATES PATENTS

2,525,941	8/1970	Smith	328/186 X
2,529,547	11/1950	Fisher	328/186 X
2,858,434	10/1958	Tollefson	328/186
3,628,061	12/1971	Jackman	307/227 X
3,654,558	4/1972	Tomisawa	307/227 X
3,659,048	4/1972	Zuerblis et al.	328/186 X
3,714,461	1/1973	Dodson	328/186 X



2. An apparatus for generating a waveform comprising:

means for generating a multilevel digital waveform having a progression of step transitions wherein each step transition differs in value from the next adjacent step transition by a factor having a first value, and

means selectively coupled to said generating means altering by a second value a selected portion of each said step transition during a selected time interval intermediate each shift in value of level of said waveform to produce a multilevel waveform wherein each level differs in value from the next adjacent level by said second value.

B 387,363

DEMODULATOR

Tore Torstensson Fjallbrant, Hokasvagen, Postlada 67, Hovas, Sweden

Continuation-in-part of Ser. No. 195,332, Nov. 3, 1971, abandoned. This application Aug. 10, 1973, Ser. No. 387,363

Claims priority, application Sweden, Nov. 23, 1970, 15810/70

Int. Cl. H03d *1/06;* **H03k** *5/18*

U.S. Cl. 329—145 **6 Claims**

Group Art Unit 252

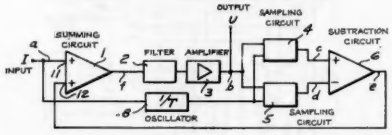
References Cited

UNITED STATES PATENTS

3,504,289	3/1970	Pfeiffer et al.	328/151 X
3,714,464	1/1973	Nutt	328/151 X

1. A demodulator for demodulating input signals which resulted from the variably sampled in a periodic manner of an analog signal comprising: a demodulator input being adapted to receive the input signals; a demodulator output; a summing circuit having two inputs and an output, first connecting means for connecting said demodulator input to one of the inputs of said summing circuit; second connecting means for connecting the output of said summing circuit to said demodulator output; and sampling means, said sampling means comprising a subtraction circuit having first and second inputs and an output, said output being connected to said other input of said summing circuit, a first sampling circuit connected between said demodulator output and the first input of said subtraction circuit for uniformly sampling signals, and a second sampling circuit connected between said demodulator output and the second input of said subtraction circuit for sampling signals according to the same sampling pattern associated with the input signals.

4. A demodulator for demodulating input signals which resulted from the variably sampled in a periodic manner of an analog signal comprising a demodulator input being adapted to receive the input signals, a demodulator output, a summing circuit having two inputs and an output, first connecting means including a signal delay means for connecting said demodulator input to one of the inputs of said summing circuit, second connecting means for connecting the output of said summing circuit to said demodulator output, sampling means connected to the other input of said summing circuit, said sampling circuit means including means for feeding to the said other input sampled signals corresponding to excluded samples in the sampling patterns associated with the sampling patterns of uniformly sample signals, and low-pass filter means connecting said demodulator input to said sampling means.



6. A demodulator for demodulating input signals which resulted from the variably sampled in a periodic manner of an analog signal comprising: a demodulator input being adapted to receive the input signals; a demodulator output, a summing circuit having two inputs and an output; first connecting means for connecting said demodulator input to one of the inputs of said summing circuit; a digital filter means connecting the output of said summing circuit to said demodulator output, and sampling circuit means including gating means connected between said demodulator output and the other input of said summing circuit, said sampling circuit means including means for feeding to the said other input sampled signals corresponding to excluded samples in the sampling patterns associated with the sampling patterns of uniformly sample signals.

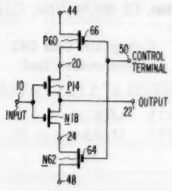
B 365,834
COMPLEMENTARY FIELD-EFFECT TRANSISTOR AMPLIFIER

William Frederick Gehweiler, Moorestown, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed June 1, 1973, Ser. No. 365,834
Int. Cl. H03f *3/18*
U.S. Cl. 330—13 **18 Claims**
Group Art Unit 252

References Cited
UNITED STATES PATENTS

3,392,341	7/1968	Burns	307/304



13. The combination of:

a complementary symmetry field-effect transistor amplifier comprising a P-type transistor, a N-type transistor, each transistor having a conduction path and a control electrode for controlling the conductance of said path, said two paths connected in series between first and second operating voltage terminals, an output terminal at the connection of said two paths, and an input terminal insulated from said output terminal and connected to both control electrodes;

means coupled to said input terminal for quiescently biasing said amplifier at an operating point at which both transistors conduct;

terminals for a voltage source; and

means coupled to said terminals for said voltage source and to said output terminal and responsive to the output voltage at said output terminal for controlling the operating voltages applied to said first and second terminals to values to stabilize the operation of said amplifier at said operating point.

B 328,164
HALF-BRIDGE AUDIO AMPLIFIER

Reuben Laverne Stauffer, 214 Coralhaven Court, Timonium, Md. 21093

Continuation of Ser. No. 51,259, June 30, 1970, abandoned.
This application Jan. 31, 1973, Ser. No. 328,164
Int. Cl. H03f *3/18*
U.S. Cl. 330—17 **9 Claims**
Group Art Unit 258

References Cited
UNITED STATES PATENTS

3,077,566	2/1963	Vosteen	330/17 X
3,387,222	6/1968	Hellwarth	330/149 X
3,566,291	2/1971	Tice, Jr.	330/149 X

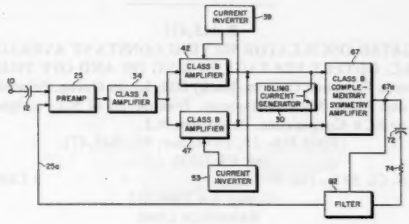
1. Means for amplifying an input frequency signal including an output terminal on which the amplified frequency signal appears comprising:

a voltage source;

a complementary symmetry transistor amplifier including a first transistor and a second transistor of opposite polarity having commonly connected collector electrodes comprising said output terminal, emitter electrodes connected across said voltage source, and first and second control electrode means;

transfer amplifier means for applying said input frequency signal to said first and second control electrode means of said first and second transistors;

means for supplying quiescent current to said transfer amplifier means whereby said quiescent current flows in said



transfer amplifier means and is applied to said first and second control electrode means of said first and second transistors;

means for generating a second current equal to said quiescent current and for applying said second current to said first and second control electrode means in a direction to cancel said supplied quiescent current therefrom.

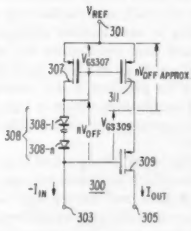
B 387,171
CURRENT AMPLIFIER

Otto Heinrich Schade, Jr., North Caldwell, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 9, 1973, Ser. No. 387,171
Int. Cl. H03f *3/16*
U.S. Cl. 330—35 **15 Claims**
Group Art Unit 258

References Cited
UNITED STATES PATENTS

3,775,693	11/1973	Proebsting	330/35



1. A current amplifier comprising:

an input, an output and a common terminals;

a first and a second and a third field effect transistors, each having a gate and a source and a drain electrodes, the source electrodes of said first and said second transistors being direct current conductively coupled to said common terminal and their gate electrodes having an interconnection therebetween, the source electrode of said third transistor being connected to the drain electrode of said second transistor; the gate and the drain electrodes of said third transistor being respectively connected to said input and said output terminals;

means for direct current conductively coupling said first transistor drain electrode to said interconnection; and

first potential regulating means connected between said input terminal and said interconnection for maintaining the potential therebetween substantially smaller than the source-to-gate potential of a self-biased field effect transistor of the same type as said first, said second and said third field-effect transistors.

B 445,471

GATED OSCILLATOR HAVING CONSTANT AVERAGE D.C. OUTPUT VOLTAGE DURING ON AND OFF TIMES

Curtis Raymond Carlson, Rocky Hill; Istvan Gorog, Princeton, and Philip Michael Heyman, Trenton, all of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Feb. 25, 1974, Ser. No. 445,471

Int. Cl. H03k *1/14*

U.S. Cl. 331—108 D **5 Claims**

Group Art Unit 252

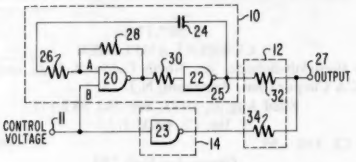
References Cited

UNITED STATES PATENTS

3,671,881 6/1972 Yorganjian ..... 331/108 D X

OTHER PUBLICATIONS

Electronic Design, Vol. 13, June 21, 1969, pp. 84–85.
The Electronic Engineer, May 1970, p. 55.



1. In combination:

an oscillator;

means for applying a control voltage to the oscillator for causing the latter to produce oscillations at an average d.c. voltage level other than a reference voltage level;

a summing circuit to which said oscillations are applied; and

means responsive to said control voltage when it is at a level to terminate said oscillations for applying to said summing circuit a voltage at a level such that it causes the summing circuit to produce a d.c. voltage level in the absence of said oscillations which is equal to that it produces during the presence of said oscillations.

5. In combination:

a logic gate oscillator comprising a first logic gate having an input terminal to which a control voltage may be applied for priming that gate and having also a feedback loop including a binary inverter connected between the output terminal of said logic gate and a second input terminal of that logic gate, the output terminal of said oscillator being coupled to the output terminal of said inverter, whereby when said oscillator is turned on, the oscillations at said output terminal are at an average d.c. voltage level other than a reference voltage level;

a second binary inverter similar to the said first inverter and receptive of said control voltage, said second inverter producing an output voltage level other than said reference voltage level when said control voltage is at a value to turn said oscillator off; and

a summming network receptive of the output of both inverters for producing, in response to said oscillations, an average d.c. voltage level at its output terminal of a given value, and for producing, in response to the output of said second inverter and the absence of said oscillations, at the summing network output terminal a d.c. voltage level of the same value as produced during said oscillations.

B 392,753

R-C FEEDBACK OSCILLATOR WITH PLURAL FREQUENCY SELECTING SWITCHES PRODUCING OUTPUT SIGNAL ONLY WHEN A SINGLE SWITCH IS CLOSED

Hans Cool, Jan van der Heydenstraat 41, Hilversum, Netherlands

Filed Aug. 29, 1973, Ser. No. 392,753

Claims priority, application Netherlands, Sept. 15, 1972, 7212510

Int. Cl. H03b *3/04, 5/26*

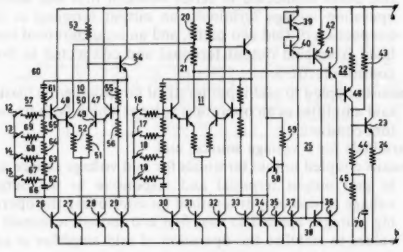
U.S. Cl. 331—110 **5 Claims**

Group Art Unit 252

References Cited

UNITED STATES PATENTS

3,699,477 10/1972 McKell 331/142
3,720,887 3/1973 Matthews et al. 331/142



1. An arrangement for generating signals for selection, comprising an amplifier with negative feedback and a frequency-dependent voltage divider which is connected between the output and the input of the amplifier, the said voltage divider producing a positive feedback and comprising resistors and capacitors and switches such that if one switch is closed, the output voltage of the voltage divider is in phase with the input voltage thereof at a given frequency, and is attenuated with respect to the input voltage by a factor which is smaller than the amplification of the amplifier, characterized in that in the variable part of the frequency-dependent voltage divider the resistors which can be switched on by contacts of the switches are situated in parallel circuits which are separated by resistors having a smaller order of value such that if two switches are simultaneously operated, the voltage divider produces an attenuation, at a frequency for which the output voltage is in phase with the input voltage, which is larger than the amplification of the amplifier.

B 409,251

CIRCULATOR WITH CONNECTING ARMS DESIGNED IN ACCORDANCE WITH THE MIC TECHNIQUE

Josef Deutsch, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Oct. 24, 1973, Ser. No. 409,251

Claims priority, application Germany, Oct. 30, 1972, 2253175

Int. Cl. H01p *1/32*

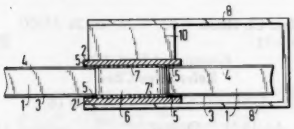
U.S. Cl. 333—1.1 **2 Claims**

Group Art Unit 256

References Cited

UNITED STATES PATENTS

3,165,711	1/1965	Drumheller et al.	333/1.1
3,324,418	6/1967	Caswell	333/1.1
3,456,213	7/1969	Hershenov	333/1.1
3,662,291	5/1972	Cotter	333/1.1



1. A circulator comprising a disc of gyromagnetic material, connecting arms for forming a branch line, said disc disposed in the zone of branching, said connecting arms constructed in accordance with microwave integrated circuit technique and comprising a plate of dielectric material surrounding said gyromagnetic disc, a continuous metal layer carried on a first side of said dielectric plate, separate connecting arm metal layers carried on the second side of said dielectric plate, a permanent magnet adjacent said disc on said second side of said dielectric plate, a first pole piece of magnetic material carrying a highly conductive metal coating disposed between said permanent magnet and said connecting arm layers and electrically connected to said connecting arm layers, a second pole piece carrying a highly conductive metal coating disposed adjacent and electrically connected to said continuous metal layer, a magnet yoke connecting said permanent magnet and said second pole piece, and an insert of dielectric material having a dielectric constant which is smaller than the dielectric constant of said gyromagnetic disc disposed between said first pole piece and said gyromagnetic disc.

B 410,168

SURFACE WAVE TUBULAR ACOUSTIC DELAY LINE

Robert L. Rosenberg, Fair Haven, and Ronald Vernon Schmidt, Matawan, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 26, 1973, Ser. No. 410,168

Int. Cl. H03h *9/26, 9/30;* **H01v** *7/00*

U.S. Cl. 333—30 R **16 Claims**

Group Art Unit 256

References Cited

UNITED STATES PATENTS

3,605,043	9/1971	Bienvenu et al.	333/30 R
3,609,602	9/1971	Devries et al.	333/72
3,736,532	5/1973	Armenakas	333/30 R

FOREIGN PATENTS OR APPLICATIONS

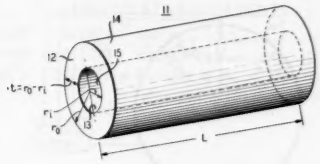
1,197,860	7/1970	Great Britain	333/30 R

OTHER PUBLICATIONS

Biot, "Propagation of Elastic Waves in a Cylindrical Bore Containing a Fluid," in Journal of Applied Physics, Volume 23, No. 9, September 1952, pages 997–1001.

1. An acoustic delay line for providing a substantially constant delay to an applied signal having a frequency band Δf comprising:

an elastic member having outer and inner closed surfaces of finite length, said inner surface defining an orifice extending through said member and providing a means for guiding said signal through said member via an acoustic surface wave which propagates on said inner surface along



the length thereof, said outer surface being sufficiently far removed from said inner surface so as to prevent any substantial transfer of said surface wave to said outer surface during propagation of said wave along the length of said inner surface.

B 430,149

VARIABLE DELAY DEVICE

Robert Kansy, Fort Wayne, Ind., and Jon Culton, Champaign, Ill., assignors to University of Illinois Foundation

Filed Jan. 2, 1974, Ser. No. 430,149

Int. Cl. H03h *9/26, 9/30;* **H01v** *7/02*

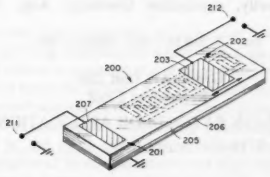
U.S. Cl. 333—30 R **6 Claims**

Group Art Unit 256

References Cited

UNITED STATES PATENTS

3,436,688	4/1969	Zilberstein	333/30 R
3,787,786	1/1974	Defebvre et al.	333/72 X



1. A surface wave variable delay device comprising:

an unpoled ferroelectric substrate having a first transducer thereon;

a substantially sinusoidal poled region at said surface and spaced from said first transducer;

a metal plate slidably disposed over said poled region; and

a metal electrode disposed on the opposing surface of said substrate, said plate and said electrode comprising a second transducer whose effective position is movable with respect to said first transducer.

B 432,373

MICROWAVE PHASE SHIFTER

Gerald I. Klein, Westbury, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 10, 1974, Ser. No. 432,373

Int. Cl. H03h *7/30*; **H01p** *1/18, 9/00*

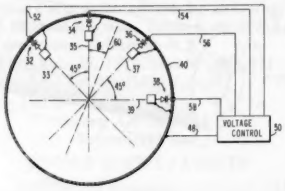
U.S. Cl. 333—31 A **14 Claims**

Group Art Unit 256

References Cited

UNITED STATES PATENTS

3,790,908	2/1974	Burns	333/31 A



1. A microwave phase shifter, comprising in combination: a section of circular waveguide adapted to propagate circularly polarized waves therein;

at least four electrically controlled variable capacitance means, adapted to respectively operate as shunt susceptances, in said waveguide section being located at substantially the same longitudinal position intermediate the central axis and the inner wall surface of the waveguide and further being spaced substantially 45° apart in a plane transverse to the central axis; and

electrical circuit means coupling respective mutually synchronized control signals to said at least four variable capacitance means for selectively varying the capacitance value thereof and providing a varying resultant shunt susceptance therefrom which generates an effective rotatable obstacle plane for said circularly polarized waves, thereby imparting a phase shift thereto which is a function of the angle of said obstacle plane relative to a fixed reference.

B 389,807

ELECTRICAL FILTER WITH A NYQUIST FLANK CHARACTERISTIC

Erwin Bucherl, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 20, 1973, Ser. No. 389,807

Claims priority, application Germany, Aug. 22, 1972, 2241159

Int. Cl. H03h *7/04*; **H04b** *1/68*

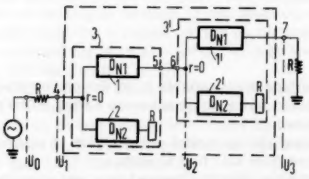
U.S. Cl. 333—70 R **6 Claims**

Group Art Unit 256

References Cited

FOREIGN PATENTS OR APPLICATIONS

111,413	9/1940	Australia	325/137



1. An electrical filter with a Nyquist flank characteristic for generating a vestigial side band comprising two identical strict divider filters each having a first filter section and a second filter section, the output of the first section of said first divider filter being connected to the input of the first section of the second divider filter, the circuit parameters being such that a signal injected at the input of said first divider filter will pass through said first section of said first filter and through the first section of said second filter with the same attenuation characteristic, said second section of each of said first and second filters being terminated in identical ohmic resistances, the attenuation functions D_{N1} and D_{N2} of said first and second filter sections of each of said divider filters being self-reciprocal functions.

B 366,589

BAND-PASS FILTER AND METHOD OF MAKING SAME

Max Hetzel, Bienne, Switzerland, assignor to Elresor SA, Bienne, Switzerland

Filed June 4, 1973, Ser. No. 366,589

Claims priority, application Switzerland, June 12, 1972, 8685/72

Int. Cl. H03h *9/02, 9/26*; **H02k** *35/00*

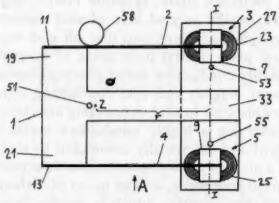
U.S. Cl. 333—71 **27 Claims**

Group Art Unit 256

References Cited

UNITED STATES PATENTS

3,621,467	11/1971	Dostal	331/156 X
3,659,230	4/1972	Tanaka et al.	333/71
3,710,275	1/1973	Tanaka et al.	331/156
3,759,133	9/1973	Budych et al.	331/156 X



1. An electromechanical band-pass filter comprising:

a support means;

a coupling mass resiliently suspended from said support means;

first and second resonator means each in the form of a leaf spring having one end rigidly fixed to said coupling mass and being provided at its free end with a plate of low remanence magnetic material to which is attached a pair of permanent magnets arranged with their magnetic axes orthogonal to the plate and to the direction of principal oscillation of said resonators;

each said plate with its magnets constituting the main portion of the mass of each resonator and at the same time comprising a part of an electrodynamic transducer;

a further part of said electrodynamic transducer being comprised in each case of a plate of low remanence magnetic material fixed to the coupling mass so as to form a part thereof and bearing thereon a coil having its axis parallel to the magnetic axes of said permanent magnets;

said coils and said permanent magnets being separated by an air gap, the arrangement being such that the magnetic lines of force flow in opposite directions through diametrically opposed portions of said coil underlying said permanent magnets.

B 439,168

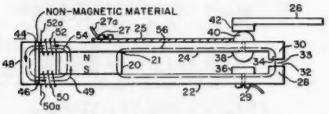
PERMANENT-MAGNET TYPE RELAY

Walter V. Bratkowski, Mc Keesport, and Metro Spewock, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 4, 1974, Ser. No. 439,168
Int. Cl. H01h 51/27
U.S. Cl. 335—179 5 Claims
Group Art Unit 212

References Cited
UNITED STATES PATENTS

3,441,883	4/1969	Alletru	335/234
3,534,307	10/1970	Spewock et al.	335/170
3,783,422	1/1974	Taylor	335/229



1. A permanent magnet type relay including:

a permanent magnet located between a pair of longitudinal ferromagnetic members intermediate the ends of the ferromagnetic members,

a first magnetic path,

said first magnetic path comprising fixed end portions of said ferromagnetic members which extend in one direction from said permanent magnet, a keeper member bridging said fixed end portions to complete the magnetic path, and non-magnetic material interposed between said fixed end portions and said keeper member,

a second magnetic path,

said second magnetic path comprising cantilever end portions of said ferromagnetic members which extend from said permanent magnet in a direction opposite from the extension of fixed first end of said ferromagnetic members, at least one of said cantilever end portions being flexible to move relative to the other of said cantilever end portions,

electrical contact means, operable to produce first and second external circuit conditions,

winding means inductively coupled to at least one of said magnetic paths,

means for energizing said winding means,

reversible current supply means for selectively reversing the flow of current through said winding means to change the relative magnitude of the flux density in said first and second magnetic paths to cause said at least one cantilever end portion to flex, flexing of said cantilever end portion causing said electrical contact means to produce a first external circuit condition when said cantilever end portions are in a position of close physical proximity and causing said electrical contacts to produce a second external circuit conditions when said cantilever end portions are in relatively spaced-apart position.

B 381,632

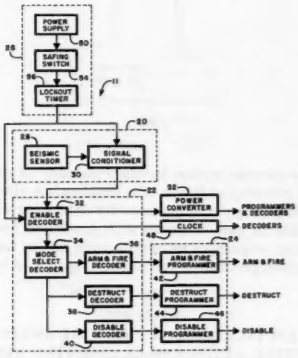
SYSTEM FOR REMOTE CONTROL OF UNDERGROUND DEVICE

Thomas D. Brumleve, Walnut Creek; Mearle G. Hicks, Livermore, and Milton O. Jones, Pleasanton, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 23, 1973, Ser. No. 381,632
Int. Cl. F42d 3/00
U.S. Cl. 340—15 4 Claims
Group Art Unit 222

References Cited
UNITED STATES PATENTS

3,572,244	3/1971	Garber	102/18
3,742,440	6/1973	Ehrlich et al.	340/16 C
3,780,654	12/1973	Shimizu et al.	102/18 X



1. A system for controlling an action of a nuclear device such as exploding, disabling or destroying a nuclear explosive, contained within a chamber at a remote underground location and isolated from the surface by a column of back filled earth, from different sequences of seismic signal pulses produced at the surface of the ground comprising a plurality of explosives emplaced in the earth near the surface of the ground and laterally displaced from said column of back filled earth; and means located at the surface for individually detonating said explosives for producing a seismic signal from each detonation in a seismic signal pulse sequence having predetermined pulse sequence characteristics determined by the desired action and for transmitting the same through the earth; and control means located adjacent said nuclear device sensitive to said seismic signal pulses, including means for producing a corresponding sequence of electrical pulses in response to said sequence of seismic signal pulses; further means for comparing the identity of said electrical pulse sequence with predetermined pulse sequence characteristics determined by the desired action and stored in said further means; and additional means for initiating the desired action of said device in response to receipt of the appropriate pulse sequence characteristics.

B 341,322
ELEVATOR SIGNAL DEVICE

Tatsuo Iwasaka; Isao Inuzuka; Minoru Nakamura; Takeo Yuminaka, and Masanobu Morita, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 14, 1973, Ser. No. 341,322

Claims priority, application Japan, Mar. 15, 1972, 47-25636; Apr. 21, 1972, 47-39595; Apr. 21, 1972, 47-39596; May 31, 1972, 47-53459

Int. Cl. G08b *5/36*

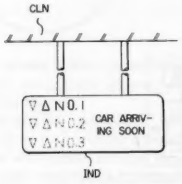
U.S. Cl. 340—19 R **22 Claims**

Group Art Unit 234

References Cited

UNITED STATES PATENTS

2,039,479	5/1936	Farch	340/19 R
2,066,909	1/1937	Bouton et al.	340/19 R
2,980,886	4/1961	Yeakley	340/19 R
3,742,445	6/1973	Lauer	340/19 R



1. In an elevator system having a plurality of elevator cars serving a plurality of floors of a buidling, an elevator signal device comprising decision means for determing which one of the plurality of cars responds to a generated hall call, and guide means responsive to said decision means for informing waiting passengers of the car responding to said hall call.

B 351,421
SYSTEM INCLUDING A PRESSURE SWITCH FOR COUNTING AXLES AND CLASSIFYING VEHICLES

Joseph R. Viracola, P. O. Box 2, Santa Monica, Calif. 90403

Filed Apr. 16, 1973, Ser. No. 351,421

Int. Cl. G08g *1/015*

U.S. Cl. 340—38 R **10 Claims**

Group Art Unit 232

References Cited

UNITED STATES PATENTS

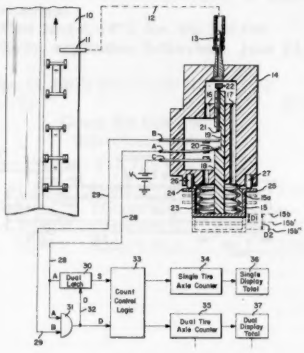
1,836,655	12/1931	Dunford	200/86 A
2,403,277	7/1946	Hall	200/86 A
2,608,609	8/1952	Fitch	200/81 R
2,639,093	5/1953	Hall	200/81 R
3,105,952	10/1963	Kidder	340/38 R
3,116,382	12/1963	Loomis et al.	200/81 H
3,699,398	10/1972	Newmeyer	340/272

2. A system including a pressure switch for classifying vehicles by providing a first output signal on a first line in response to a single tire axle and a second output signal on a second line in response to a dual tire axle, said system including, in combination:

a. an expandable air chamber means for connection to a hose over which vehicle tires run, said chamber expanding from a normally contracted position to a first distance in response to a pulse of air generated by a single tire axle running over said hose and expanding to a second distance greater than said first distance in response to a pulse of air generated by a dual tire axle running over said hose;

b. a first switch means connected to said first line and coupled to said air chamber means and held in an open position by said air chamber means when in said contracted position, said first switch means being released by said air chamber means to close when said air chamber means expands to said first distance to provide said first output signal; and,

c. a second switch means connected to said second line and coupled to said air chamber means, said second switch means being normally opened, said air chamber means positively closing said second switch means when it expands to said second distance to provide said second output signal.



9. A system for counting single axles including, in combination:

a. hose means positioned on a roadway so that a tire running over the hose means generates an air pulse;

b. air chamber means connected to the hose and including an element movable in response to said air pulse;

c. a switch means including a resilient switch arm normally biased to close but engaged to be held open by said element in the absence of any air pulses, movement of said element in response to a pulse of air disengaging said switch arm to thereby permit it to close; and

d. counting means connected to said switch means for counting the number of times the switch arm is closed.

B 339,838
EXHAUST BACKPRESSURE WARNING SYSTEM

Frank Thing, P. O. Box 35, Guatay, Calif. 92031

Filed Mar. 9, 1973, Ser. No. 339,838

Int. Cl. B60q *1/00;* **F02b** *77/10*

U.S. Cl. 340—52 R **2 Claims**

Group Art Unit 234

References Cited

UNITED STATES PATENTS

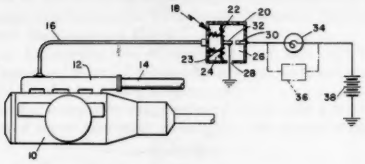
1,266,627	5/1918	Renne	137/557
2,253,425	8/1941	Garland	340/60
3,223,068	12/1965	Van Winkle	137/557
3,548,591	12/1970	McKay	60/29

1. An exhaust backpressure warning system for an internal combustion engine comprising:

an exhaust system;

a pressure sensor operably connected with said exhaust system and responsive to abnormally high pressure within said exhaust system; and

a signal device activated by said sensor and positioned near the normal operating station of said engine to alert the



operator thereof of an abnormally high pressure condition in said exhaust system.

B 222,188

VEHICLE BRAKE AND INDICATOR LIGHT CONTROL SYSTEM

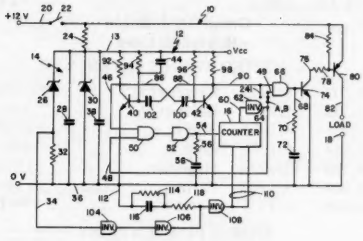
James Daniel Caughlin, and William John Ozeroff, both of La Jolla, Calif., assignors to James Caughlin Daniel, La Jolla, Calif.

Filed Jan. 31, 1972, Ser. No. 222,188
Int. Cl. B60q 1/26
U.S. Cl. 340—72 **5 Claims**
Group Art Unit 234

References Cited

UNITED STATES PATENTS

2,098,742	11/1937	Curtiss	340/56
3,555,507	1/1971	Burson	340/56 X
3,576,527	4/1971	Howard	340/67



1. In a vehicle brake and indicator light control system,
a first electrical circuit for energizing signal lights,
first and second switch means in said first electrical circuit, said first switch means closing said first electrical circuit and energizing said signal lights in response to actuating the vehicle's brakes,
said second switch means opening said first electrical circuit and de-energizing said signal lights upon being de-energized,
a source of timed pulses,
second circuit means responsive to said closing of said first switch means for initating timed pulses from said source, counter means for counting said timed pulses and providing output pulses in response to counting said timed pulses and a steady state output signal after counting a given number of said pulses,
gate means responsive to said timed pulses and said output pulses for providing an output signal to said second switch means energizing and deenergizing said second switch means and said signal lights,
and said gate means being responsive to said steady state output signal for energizing said second switch means closing said first electrical circuit.

B 411,633

FAULT DETECTION ARRANGEMENT FOR DIGITAL TRANSMISSION SYSTEM

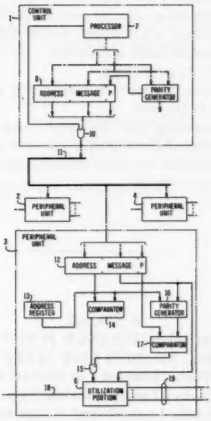
Richard Harlan Bonser, North Aurora, and Robert Joseph Willett, Winfield, both of Ill., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 1, 1973, Ser. No. 411,633
Int. Cl. H04l 1/10
U.S. Cl. 340—146.1 C **7 Claims**
Group Art Unit 236

References Cited

UNITED STATES PATENTS

3,069,657	12/1962	Green, Jr. et al.	340/146.1 C
3,287,697	11/1966	Jackel	340/146.1 C
3,384,873	5/1968	Sharma	340/146.1 C
3,551,885	12/1970	Henzel	340/146.1 C
3,735,351	5/1973	Macheel	340/146.1 C



1. In an information receiving circuit for receiving digital words which comprise a digital address portion, a digital message portion, and an error detecting code portion derived from the combination of said digital address and said digital message a protection arrangement comprising means for storing a digital address, means for comparing the digital address portion of a received digital word with the digital address stored in said storage means, encoding means for deriving an error detecting code from the combination of the digital message portion of a received digital word and the digital address stored in said storage means, means for comparing the error detecting code derived by said encoding means with the error detecting code portion of a received digital word, and means for generating an enable signal when both of said means for comparing indicate that their respective compared quantities are identical.

B 394,088

ERROR DETECTOR FOR PSEUDO-RANDOM SEQUENCE OF DIGITS

Swan Bing Han, Hazeldean, Ontario, Canada, assignor to Bell-Northern Research Ltd., Ottawa, Ontario, Canada

Filed Sept. 4, 1973, Ser. No. 394,088
Int. Cl. G08c *25/00*
U.S. Cl. 340—146.1 E **7 Claims**
Group Art Unit 236

References Cited

UNITED STATES PATENTS

3,315,228	4/1967	Futerfas et al.	340/146.1 E
3,380,023	4/1968	Magnuski	340/146.1 E
3,562,710	2/1971	Halleck	340/146.1 E
3,596,245	7/1971	Finnie et al.	340/146.1 E
3,689,884	9/1972	Tew, Jr.	340/146.1 E
3,725,860	4/1973	Kemper et al.	340/146.1 E
3,755,731	7/1973	Young	340/146.1 E
3,760,354	9/1973	Ginn	340/146.1 E

1. In an error detector for a pseudo-random sequence of digits comprising:

means responsive to said sequence of digits for generating a replicated sequence of digits; and

means for comparing corresponding digits of the replicated sequence with those of said pseudo-random sequence to derive indicated error digits when anticoincidence is detected between said sequences;

the improvement comprising:

means responsive to true error digits for generating replicated error digits; and

means for comparing said indicated error digits with said replicated error digits to derive said true error digits when anticoincidence is detected between said indicated and replicated error digits.

B 309,207

DATA SYSTEM MULTIBRANCH JUNCTION CIRCUIT HAVING BRANCH LINE SELECTION

Scott McDowell Fitch, Holmdel; Leo Michael Kolensky, Irvington; Joseph Conrad Panek, Jackson Twp., Ocean County; David Charles Rife, Lincroft, and Walter Rudolph Schaefer, Wall Twp., Monmouth County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1972, Ser. No. 309,207
Int. Cl. H04q *5/00*
U.S. Cl. 340—147 R **8 Claims**
Group Art Unit 234

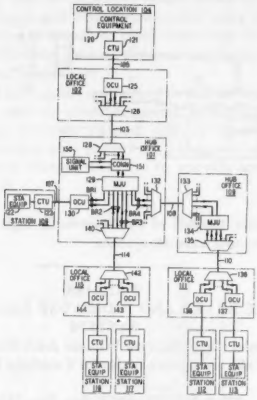
References Cited

UNITED STATES PATENTS

3,288,919	11/1966	Abbott	340/147 LP
3,526,757	9/1970	Rees et al.	340/147 LP
3,639,904	5/1972	Arulpragsam	340/147 LP
3,665,398	5/1972	Kawai et al.	340/147 LP

1. A junction circuit terminating a main line and a plurality of branch lines and having means for broadcasting data words and control words from the main line to all of the branch lines and means for controlling the passage of data words and control words from each of the branch lines to the main line characterized in that

the passage controlling means normally enables the passage of data words and blocks the passage of control words and there is further included means responsive to branch line selection signals from the main line for changing the enabling and blocking operation of the passage controlling means of selected branch lines and differently changing the enabling and blocking operation of the passage controlling means of unselected branch lines.



B 356,602

MAGNETIC RECORD MEDIUM AUTHENTICATION SYSTEM

Richard E. Fayling, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 2, 1973, Ser. No. 356,602
Int. Cl. G11b *5/02, 5/09*
U.S. Cl. 340—149 A **4 Claims**
Group Art Unit 234

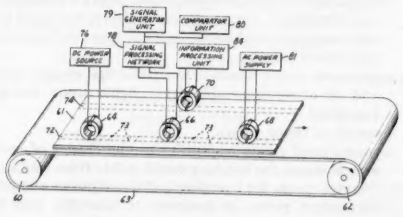
References Cited

UNITED STATES PATENTS

3,200,207	8/1965	Rainer et al.	179/100.2 CH
3,566,356	2/1971	Holm et al.	340/149 A
3,573,981	4/1971	Ahn et al.	340/174 NA
3,609,684	9/1971	Lipp	340/149 R
3,626,160	12/1971	Hagopian	235/61.11 D
3,714,664	1/1973	Fayling	346/74 M
3,739,086	6/1973	Heather	179/100.2 S

OTHER PUBLICATIONS

IBM Technical Disclosure Bulletin, Vol. 9. No. 11, Apr., 1967, Pg. 1499, 1500, J. J. Hagopian.



1. A system for authenticating a record medium having a magnetic recording layer containing uniformly dispersed magnetizable material having magnetic anisotropy wherein the magnetizable material at a plurality of selected locations is differently aligned from the alignment of the magnetizable material at a reference location to provide a magnetically

detectable permanent fixed information pattern, which system comprises

means for applying a substantially unidirectional magnetic field to said magnetic recording layer to magnetize said magnetizable material to different intensities depending upon the alignment thereof,

means for sensing the magnetization of said differently magnetized material to produce a signal representative of said fixed information pattern, and

means for comparing said produced signal with a predetermined signal pattern to authenticate the record medium.

B 381,847

AUTOMATIC DATA RETRIEVAL SYSTEM FOR PUMPING WELLS

James L. Hagar, Oklahoma City, and Harold E. Schwartz, Jr., Norman, both of Okla., assignors to Mobile Oil Corporation

Division of Ser. No. 258,756, June 1, 1972, Pat. No. 3,824,851. This application July 23, 1973, Ser. No. 381,847

Int. Cl. G06f *3/04, 3/05;* **H049** *9/02*

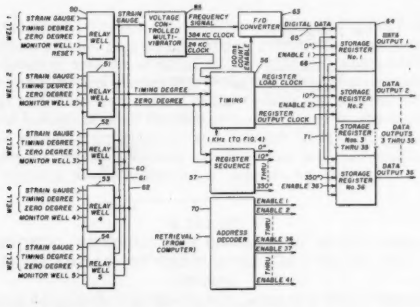
U.S. Cl. 340—172.5 **7 Claims**

Group Art Unit 237

References Cited

UNITED STATES PATENTS

3,350,687	10/1967	Gabrielson	340/163
3,541,513	11/1970	Paterson	340/151
3,559,177	1/1971	Benson	340/163
3,588,832	6/1971	Duncan	340/172.5
3,629,855	12/1971	Conley	340/172.5
3,629,859	12/1971	Copland	340/172.5
3,731,279	5/1973	Halsall	340/172.5
3,760,362	9/1973	Copland	340/172.5



1. A well monitoring system for measuring operating conditions at a plurality of pumping wells of the type having a crank shaft and a sucker rod string and means to reciprocate the sucker rod string to operate a downhole pump as the crank shaft revolves, comprising:

a. at least two transducers connected to each of said pumping wells, a first transducer generating a load signal representative of the changing load conditions on the sucker rod string during pumping and a second transducer generating a timing pulse at least once during each pumping stroke of the sucker rod string representative of the rate of rotation of said crank shaft,

b. a central computer for generating a plurality of monitor commands, each monitor command identifying a selected one of said pumping wells, and a retrieval command, and

c. a remote terminal unit coupled to said transducers and to said central computer, comprising:

1. a frequency-to-digital converter,

2. a digital storage unit connected to the output of said frequency-to-digital converter,

3. means responsive to each of said monitor commands for selectively connecting the first transducer at the pumping well identified by a monitor command to said frequency-to-digital converter and the second transducer at the same pumping well to said digital storage unit, whereby the load signal from the selected pumping well is converted to a digital signal by the frequency-to-digital converter and whereby the timing signal from the selected pumping well enables the digital storage unit to store the digital signal from the frequency-to-digital converter at a data rate dependent upon the rate of rotation of the crank shaft of the selected pumping well, and

4. means responsive to said retrieval command from the computer for enabling the digital signals to be clocked out of the digital storage unit into said computer at a data rate that is independent of the rates of rotation of the crank shafts of the pumping wells.

B 347,780

DEVICE FOR RECORDING AND RETRIEVING INFORMATION IN A HOLOGRAPHIC DATA STORAGE SYSTEM

Gerd Goldmann, and Hans Eschler, both of Muenchen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Apr. 4, 1973, Ser. No. 347,780

Claims priority, application Germany, Apr. 11, 1972, 2217408

Int. Cl. G11c *13/04*

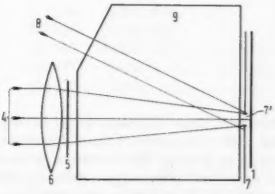
U.S. Cl. 340—173 LM **6 Claims**

Group Art Unit 235

References Cited

UNITED STATES PATENTS

3,765,749	10/1973	Lamacchia	340/173 LM



1. A device for storage data as holograms on a storage plate comprising a storage plate, a source of illumination, an optical lens system for focusing the source of illumination on a data mask and subsequently onto the storage plate for recording the information contained on the data mask as holograms, the improvement comprising interposing a mass of immersion material having an index of refraction greater than one between the lens system and the storage plate during recording.

B 340,212

DATA HANDLING SYSTEM WITH ROTATABLE FIBER OPTIC SHUTTER

Harold E. Camp, Toledo, Ohio, and John D. Grier, Bridgeton, N.J., assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 574, Jan. 5, 1970, Pat. No. 3,749,487. This application Mar. 12, 1973, Ser. No. 340,212
Int. Cl. G11c *11/28*; H01l *17/00*; H05b *41/00*
U.S. Cl. 340—173 PL **8 Claims**
Group Art Unit 235

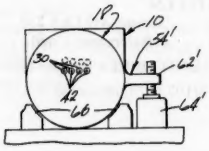
References Cited

UNITED STATES PATENTS

3,233,515	2/1966	Platzer et al.	350/267
3,447,138	5/1969	Carson et al.	340/173 CC
3,723,977	3/1973	Schaufele	340/173 PL
3,731,225	5/1973	Wild et al.	350/96 B
3,737,367	6/1973	Roberts et al.	350/96 B
3,752,994	8/1973	Grier et al.	350/96 B

FOREIGN PATENTS OR APPLICATIONS

1,946,693	8/1970	Germany	350/96 B



5. In combination, a gas discharge panel having a print-out face provided with a plurality of fixed locations selectively energizable so as to become illuminated to present an illuminated pattern of desired information, print-out means having a surface sensitive to illumination and operative to make a record of an illuminated pattern on said print-out face, print-through means interposed between said print-out face and said illumination sensitive surface and including a matrix of coherently arranged light conducting elements, each having an input end thereof positioned to register with one of said fixed locations on said print-out face and an output end thereof positioned adjacent said illumination sensitive surface of the print-out means, so as to transfer the illuminated pattern to the print-out means, the print-through means also including turn-off means for predeterminately alternately interrupting and initiating the transfer of illumination by the print-through means, the turn-off means including means to rotate said print-through means about an axis parallel to said light conducting elements between a position where the input ends of all said light conducting elements register with said fixed locations on said print-out face and another position where said input ends of all said light conducting elements are out of register with said fixed locations on said print-out face, whereby the transfer of illumination may be interrupted.

B 351,665

SYMMETRIC SWITCHING FUNCTIONS USING MAGNETIC BUBBLE DOMAINS

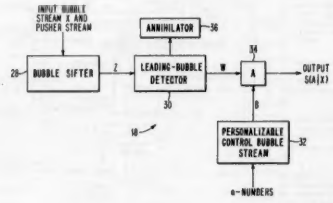
Hsu Chang, Yorktown Heights, N.Y.; Tien Chi Chen, and Chin Tung, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,665
Int. Cl. G11c *11/14*, *19/00*
U.S. Cl. 340—174 TF **34 Claims**
Group Art Unit 235

References Cited

UNITED STATES PATENTS

3,670,313	6/1972	Beausoleil et al.	340/174 TF
3,678,287	7/1972	Chow	340/174 GA
3,680,067	7/1972	Chow	340/174 TF
3,689,902	9/1972	Chang et al.	340/174 TF
3,701,125	10/1972	Chang et al.	340/174 TF
3,701,132	10/1972	Bonyhard	340/174 TF
3,711,842	1/1973	Chow	340/174 TF
3,743,788	7/1973	Krupp et al.	340/174 TF
3,753,253	8/1973	Smith	340/174 TF
3,760,390	9/1973	Murakami	340/174 TF
3,803,564	4/1974	Murakami	340/174 GA



1. A symmetric switching device for performing a desired function using magnetic bubble domains, comprising:

a magnetic medium in which said bubble domains exist,

a counter responsive to an input data pattern comprised of bubble domains representative of information, said counter including means for counting the number of said bubble domains in said input data pattern and means for providing an output indicative of said count,

personalization means for providing a control pattern of bubble domains corresponding to said desired function, and

comparison means for comparing the output of said counter with said bubble domains in said control pattern.

10. The process of claim **9**, including the further step of providing a different pattern of bubble domains corresponding to another function to be preformed.

B 367,021

PUMP ALARM SYSTEM

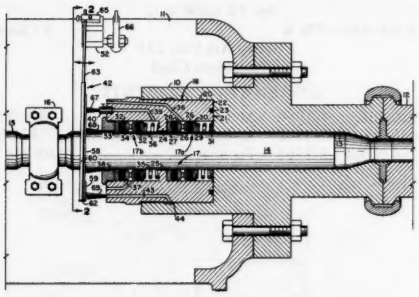
Willis W. Howard; William C. Maurer, and Everett H. Lock, all of Houston, Tex., assignors to Exxon Production Research Company

Filed June 4, 1973, Ser. No. 367,021
Int. Cl. G08b *21/00*; F01b *25/26*
U.S. Cl. 340—242 13 Claims
Group Art Unit 234

References Cited

UNITED STATES PATENTS

2,801,409	7/1957	Sperling	340/242
3,180,134	4/1965	Wadlington	417/9 X
3,209,830	10/1965	Orr et al.	277/2 X
3,276,246	10/1966	Truman et al.	277/2 X



11. An alarm system for detecting incipient leakage of fluid past the plunger packing of a plunger pump which comprises: a detector member adapted to be positioned substantially around the pump plunger and to the rear of the plunger packing, said detector member being movable by high velocity fluid leakage through the plunger packing; and an alarm circuit including an indicator and a switch for actuating said indicator, said switch being movable to an activated position in response to movement of said detector member.

B 351,493

DIGITAL READOUT FOR DISPLAYING BOTH LONG TERM AND SHORT TERM AVERAGE VALUES OF A SIGNAL

James Flagg Ingle, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 16, 1973, Ser. No. 351,493
Int. Cl. G09f *9/32*
U.S. Cl. 340—336 5 Claims
Group Art Unit 234

References Cited

UNITED STATES PATENTS

3,343,155	9/1967	Pahlavan	340/336
3,626,289	12/1971	Vinson et al.	324/96
3,648,270	3/1972	Metz et al.	340/324 AD
3,766,474	10/1973	MacDonald	324/122

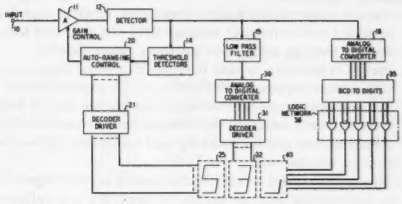
1. In a display system of the type including a plurality of numeric display units for yielding a visual indication of the long term average amplitude value of a supplied signal, wherein the improvement comprises:

means for obtaining a visual indication of instantaneous variations in at least the least significant digit of the amplitude value of a supplied signal including,

display means having a plurality of illuminatable elements, specific amplitude values being assigned to individual ones of said elements in accordance with a pre-established code scheme,

means responsive to a supplied signal for generating digital signals representative of the instantaneous amplitude value of said supplied signal, and

means for supplying said digital signals in a predetermined relationship to individual ones of the elements of said display means, wherein the intensity of illumination of



said elements is proportional to the time interval that the instantaneous amplitude value of said supplied signal is at the amplitude value assigned to said elements and wherein said illuminatable elements are arranged in a predetermined spatial relationship so that an observer may perceive a range of the instantaneous variations in said at least least significant digit of the amplitude value of said supplied signal by viewing the intensity of illumination of said elements.

B 343,577

HIGH RESOLUTION GRAPHIC DATA TABLET

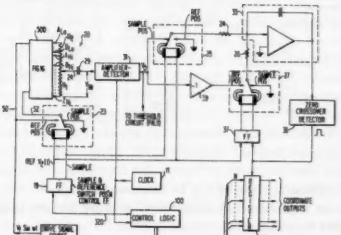
Herbert Dym, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 21, 1973, Ser. No. 343,577
Int. Cl. H03k *13/20*
U.S. Cl. 340—347 NT 13 Claims
Group Art Unit 236

References Cited

UNITED STATES PATENTS

2,630,481	3/1953	Johnson	340/347 P
3,253,273	5/1966	Allen et al.	340/347 AD
3,267,251	8/1966	Anderson	235/61.6 A
3,342,935	9/1967	Leifer et al.	178/19
3,624,293	11/1971	Baxter	178/18
3,732,369	5/1973	Cotter	178/18



10. A position transducing system comprising:

a. a voltage distribution means having end taps and intermediate taps defining adjacent sectional parts of distribution means for producing, in response to a voltage applied to any pair of said taps, a distributed voltage which varies

between said pair of taps as a function of position between said pair of taps,

b. reference voltage producing means,

c. sensor means movable in the vicinity of said voltage distribution means for sensing said distributed voltage most nearly adjacent the instantaneous position of said sensor means,

d. mode control means for providing first and second mode control signals designating first and second mode operation, respectively,

e. means responsive to said first mode control signal for applying said reference voltage between said end taps,

f. section storage means for storing a value therein,

g. means responsive to said first mode control signal and to said sensor means for deriving a value representative of the said section of said voltage distribution means which is most nearly adjacent the instantaneous position of said sensor means and for entering said value into said section storage means, and

h. means responsive to said second mode control signal and to said section storage means for applying said reference voltage between the pair of said taps which define the said section designated by the value stored in said section storage means.

B 289,523

CAPACITANCE MATRIX KEYBOARD

John W. Volpe, Rockland, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sept. 15, 1972, Ser. No. 289,523

Int. Cl. H04l *15/06*

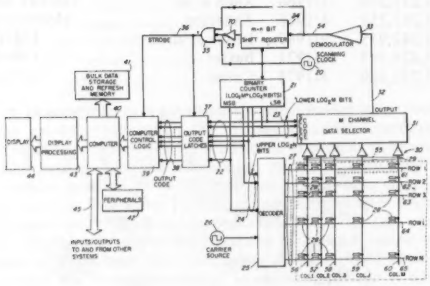
U.S. Cl. 340—365 C **12 Claims**

Group Art Unit 234

References Cited

UNITED STATES PATENTS

3,437,795	4/1969	Kuljian	340/365 C
3,623,082	11/1971	Stein et al.	340/365 S
3,651,463	3/1972	Rawson et al.	340/365 S
3,662,378	5/1972	MacArthur	340/365 S
3,675,239	7/1972	Ackerman	340/365 E
3,683,371	8/1972	Holz	340/365 L
T904,008	11/1972	Crouse	340/365 C



7. A keyboard comprising in combination:

means to produce a continuously cycling binary count;

a carrier signal source;

means for applying said carrier signal to a first set of conductors one at a time in response to the higher order bits of said binary count;

means to selectively couple said carrier signal from a conductor of said first set of conductors to a conductor of a second set of conductors;

means to couple in response to the lower order bits of said binary count said second set of conductors one at a time to a demodulator means;

means to demodulate said carrier signal; and

means to store the said binary count.

B 331,895

APPARATUS FOR THE RAPID INDICATION OF VISUAL INFORMATION ARRANGED IN A MOSAIC SYSTEM BY MEANS OF MAGNETIC INDICATING ELEMENTS

Jozsef Mandzsu; Laszlo Jagicza; Sandor Jodal; Lajos Ducza, and Laszlo Avarosi, all of Budapest, Hungary, assignors to FOK-GYEM Finommechanikai es Elektronikus Muszergyarto Sz., Budapest, Hungary

Filed Feb. 12, 1973, Ser. No. 331,895

Claims priority, application Hungary, Feb. 11, 1972, FO 644

Int. Cl. G09f *9/32*

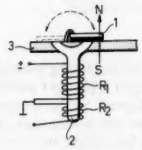
U.S. Cl. 340—378 R **3 Claims**

Group Art Unit 234

References Cited

UNITED STATES PATENTS

2,920,408	1/1960	McGuire	340/336
3,036,300	5/1962	Knight	340/336
3,266,033	8/1966	Frohbach	340/378 R



1. In apparatus for the indication of visual information by means of magnetic indicating elements arranged in a mosaic system, comprising permanent magnet flip-members displaying the information on a base panel and electromagnets excitable in a bipolar manner to control the flip-members, the electromagnets having excitation coil means whose leads are connected to an electronic control unit by which bipolar signals for excitation of the coils are emitted; the improvement in which the electromagnets have iron cores consisting at least in part of a hard magnetic material having remanent magnetism the coercivity of which is smaller than the coercivity of said permanent magnetic flip-members, the permanent magnet flip-members having a smaller magnetic field strength than that required for the demagnetization of the iron core of the associated electromagnet in the operative condition.

B 361,443

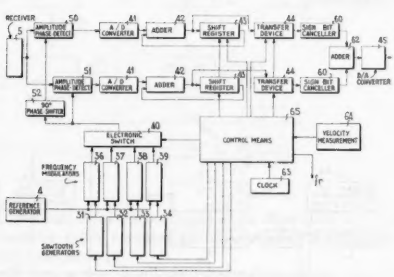
SYSTEM FOR PROCESSING THE SIGNAL RECEIVED BY A SIDEWAYS LOOKING AIRBORNE RADAR SYSTEM

Henri Poinsard, and Jean Lemoing, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed May 17, 1973, Ser. No. 361,443
Claims priority, application France, May 19, 1972, 72.018033
Int. Cl. G01s 9/02
U.S. Cl. 343—5 CM 7 Claims
Group Art Unit 222

References Cited
UNITED STATES PATENTS

3,242,484	3/1966	Russell	343/5 CM
3,737,900	6/1973	Vehrs, Jr.	343/5 CM
3,768,096	10/1973	Dentino	343/5 CM



7. A system for processing the signals received by a sideways looking airborne pulse radar system, used in combination with a device for measuring the velocity of the aircraft comprising:

first generating means for providing a reference signal;

second generating means for providing a plurality of sawtooth signals, each sawtooth signal having a repetition period and a slope depending on both the velocity of the aircraft and the distance of a determined target region;

distance gating means for successively selecting portions of said sawtooth signals at determined instants of each repetition period of the radar pulses;

modulating means for modulating said reference signal with the output signal of said distance gating means thereby providing a sawtooth frequency modulated signal;

comparing means for comparing said received signals with said sawtooth frequency modulated signal, providing output signals in response to said comparison;

range-gated integrating filtering means for integrating each output signal of the comparing means during a period equal to the repetition period of the corresponding sawtooth signal used for providing said output signal; and

control means fed by said velocity measuring device and coupled to said second generating means for controlling the periods and slopes of said sawtooth signals and to said integrating means for controlling their integration time.

B 392,894

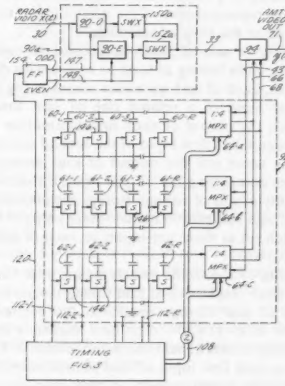
HYBRID FILTER EMPLOYING DIGITAL TECHNIQUES AND ANALOG COMPONENTS AND AMTI RADAR EMPLOYING SAME

Herbert Green, Elmsford, N.Y.; Robert A. Guarino, Monroe, and John H. Fitzgerald, Norwalk, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 30, 1973, Ser. No. 392,894
Int. Cl. G01s 9/42; H04b 1/10
U.S. Cl. 343—7.7 9 Claims
Group Art Unit 222

References Cited
UNITED STATES PATENTS

3,370,292	2/1968	Deerfield	343/5 DP
3,619,586	11/1971	Hoff et al.	235/152
3,737,900	6/1973	Vehrs	343/5 DP
3,775,768	11/1973	Lisle et al.	343/7.7
3,795,877	3/1974	Poole	328/167
3,798,560	3/1974	Taylor	235/152



1. An Mth order integrating filter comprising:

input means receiving a time varying electrical signal to be filtered;

timing means providing first and second sequences of related timing signals, said first sequence timing signals appearing at times other than the times of appearance of said second sequence timing signals;

quantizer means responsive to said input means for sampling said signal to be filtered in response to said first sequence of timing signals, said quantizer means presenting between successive ones of said first sequence of timing signals a voltage representative of the magnitude of the signal to be filtered at the time of sampling;

first and second voltage summation means, each having at least M inputs with different scale factors, said quantizer means being connected to a first input of said first summation means the output of said first summation means being connected to a first input of said second summation means, the output of said second summation means comprising the output of said filter;

a plurality of voltage storage means, there being at least as many as there are inputs to one of said summation means; and

electronic switch means responsive to said timing means for connecting each of said storage means, in a cyclically repetitive sequence in response to successive ones of said second sequence of timing signals, first to said first input of said second summation means, second to second inputs

of both said first and second summation means, and, if there are more than two inputs to said summation means, successively to successive inputs of both said first and second summation means, each of said summation means inputs being connected to only one of said storage means at any one time, each of said storage means being connected according to a different step in the related cyclically repetitive sequence at any one time.

9. A range gated integrating radar video processor comprising:

input means receiving a time varying electrical signal to be filtered;

timing means providing first and second sequences of related timing signals, said first sequences timing signals appearing at times other than the times of appearance of said second sequences timing signals, said timing means providing a plurality of said first sequences of timing signals, each related to a different range gate;

a plurality of quantizer means, each responsive to said input means for sampling said signal to be filtered in response to a corresponding one of said first sequences of timing signals, said quantizer means presenting, between successive ones of a related first sequence of timing signals, a voltage representative of the magnitude of the signal to be filtered at the time of sampling;

a plurality of sets of first and second voltage summation means, each having at least M inputs with different scale factors, each of said quantizer means being connected to a first input of a related one of said first summation means, the output of each first summation means being connected to a first input of the second summation means of the same set, the output of said second summation means comprising the output of said processor;

a plurality of sets of voltage storage means, one set for each set of said summation means, there being at least as many in each set as there are inputs to each of said summation means; and

a plurality of electronic switch means, one for each of said sets, each responsive to said timing means for connecting each of said storage means to the related summation means in a cyclically repetitive sequence in response to successive ones of said second sequence of timing signals, first to said first input of said second summation means, second to second inputs of both said first and second summation means, and, if there are more than two inputs to said summation means, successively to successive inputs of both said first and second summation means, each of said summation means inputs being connected to only one of said storage means at any one time, each of said storage means being connected according to a different step in the related cyclically repetitive sequence at any one time.

B 278,491

METHOD AND SYSTEM FOR COMPUTING ALTITUDE OVER A TARGET AND THE HORIZONTAL RANGE THEREOF

Donald J. Schmidt, Laurel, Md., assignor to The United States of America as represented by the Secretary of the Air Force

Filed July 31, 1972, Ser. No. 278,491

Int. Cl. G01s 9/04

U.S. Cl. 343—12 A **3 Claims**

Group Art Unit 222

References Cited

UNITED STATES PATENTS

2,454,673	11/1948	Sanders, Jr.	343/7 ED
2,988,960	6/1961	Helgeson et al.	343/7 ED
2,995,984	8/1961	Helgeson et al.	343/7 ED

1. A system for computing altitude over a target and horizontal range thereof from an aircraft comprising:

a. mapping radar having azimuth output A and slant range output R at a present time t;

b. a source of heading reference ψ;

c. a ground velocity data source having outputs of vertical velocity V_v and north and east components of ground velocity V_N and V_E respectively of the aircraft;

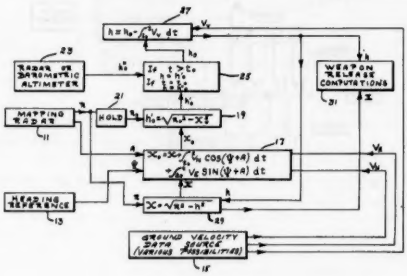
d. a first means for computing the horizontal range X_o at a time of acquisition t_o according to the relationship

$$X_o = X + \int_{t_0}^{t} V_N \cos(\psi + A)\,dt + \int_{t_0}^{t} V_E \sin(\psi + A)\,dt$$

the first horizontal range computing means being fed by the azimuth output A from the mapping radar, the heading reference source, and the ground velocity data source;

e. means for holding the slant range R producing the output R_o at time t_o;

f. a first means for computing height h_o' according to the relationship



$$h_o' = \sqrt{R_o^2 - X_o^2}$$

the first height computing means being fed by the holding means and the first horizontal range computing means;

g. an altimeter;

h. means for logical selection of the outputs of the altimeter and the first height computing means the selection depending respectively upon the equality of the present time t and the acquisition time t_o or t being greater than t_o;

i. a second means for computing height h according to the relationship

$$h = h_o - \int_{t_0}^{t} V_v\,dt$$

the second height computing means being fed by the ground velocity data source and logical selection means; and

j. a second means for computing the horizontal range X at present time t according to the relationship

$$X \quad \sqrt{R^2 - h^2}$$

the second horizontal range computing means being fed by the mapping radar and the second height computing means.

B 346,487

METHOD AND APPARATUS FOR OFF-BORESIGHT ANGLE CORRECTION FOR MONOPULSE RADARS WITH SLOW AGC NORMALIZATION

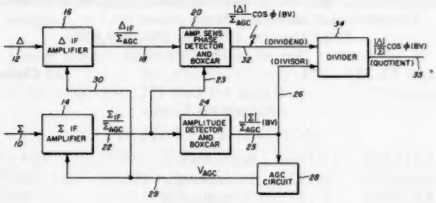
Joseph Albert Bruder, Snyder, N.Y., assignor to Calspan Corporation, Buffalo, N.Y.

Filed Mar. 30, 1973, Ser. No. 346,487
Int. Cl. G01s 9/22
U.S. Cl. 343—16 M 10 Claims
Group Art Unit 222

References Cited

UNITED STATES PATENTS

2,934,757	4/1960	Hoefer et al.	343/16 M
3,599,208	8/1971	Nelson	343/16 M X
3,703,003	11/1972	Diamond	343/16 M X
3,720,941	3/1973	Ares	343/16 M X



1. A method for off-boresight angle correction in a 2-horn monopulse radar employing a slow AGC normalization including the steps of:

receiving a first signal representing the vector sum of the signals in the two horns;

receiving a second signal representing the vector difference of the signals in the two horns;

amplifying said first and second signals;

detecting and boxcarring said amplified first signal;

using said boxcarred first signal in an AGC circuit to control the gain in the amplifying of said first and second signals;

detecting and boxcarring said amplified second signal responsive to the phase of said amplified first signal; and

dividing said boxcarred second signal by said boxcarred first signal whereby the off-boresight angle is determined independent of the influence of said AGC circuit.

2. A method for off-boresight angle correction in a 4-horn monopulse radar employing a slow AGC normalization including the steps of:

receiving a first signal representing the vector sum of the signals in the four horns;

receiving a second signal representing the vector sum of the signals in the two horns on the left side minus the vector sum of the signals in two horns on the right side;

receiving a third signal representing the vector sum of the signals in the top two horns minus the vector sum of the signals in the bottom two horns;

amplifying said first, second and third signals;

detecting and boxcarring said amplified first signal;

using said boxcarred first signal in an AGC circuit to control the gain in amplifying said first, second and third signals;

detecting and boxcarring said amplified second and third signals responsive to the phase of said amplified first signal;

dividing said boxcarred second signal by said boxcarred first signal; and

dividing said boxcarred third signal by said boxcarred first signal, whereby the azimuth and elevation off-boresight angles are determined independent of the influence of said AGC circuit.

B 351,222

FLUID PEN ASSEMBLY

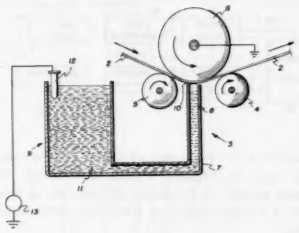
Ronald J. Weerstra, Clare, Mich., assignor to Xerox Corporation, Stanford, Conn.

Filed Apr. 16, 1973, Ser. No. 351,222
Int. Cl. G03g 15/00
U.S. Cl. 346—74 ES 10 Claims
Group Art Unit 232

References Cited

UNITED STATES PATENTS

1,711,497	5/1929	Hiltz et al.	235/61.11 A
1,827,362	10/1931	Hiltz et al.	235/61.11 A
3,626,422	12/1971	Lloyd	346/74 ES



6. Recording apparatus comprising

a recording medium,

a container having an opening therein adjacent one side of said medium,

an electrically conductive fluid in said container forming a convex menisucs at one end thereof extending beyond said opening and contacting said one side of said medium,

means for moving said medium in contact with said meniscus, said fluid being non-wettable to said medium,

a source emitting electrical signals in accordance with information to be recorded, and

means for connecting said source across said fluid and said recording medium whereby an electrical charge is deposited on said recording medium in accordance with said electrical signals.

B 383,465

ADAPTER FOR USE WITH A PACKAGED FLASHLAMP ARRAY

Seymour Ellin, Chestnut Hill, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 26, 1973, Ser. No. 383,465
Int. Cl. G03b 15/04; H05b 43/02
U.S. Cl. 354—143 36 Claims
Group Art Unit 211

References Cited

UNITED STATES PATENTS

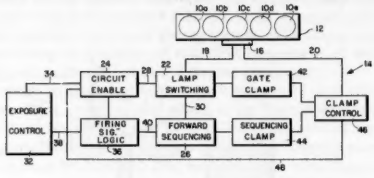
3,550,514	12/1970	Harvey	95/11 L
3,618,492	11/1971	Ellin	240/1.3 X
3,676,045	7/1972	Watrous et al.	95/11.5 UX
3,699,861	10/1972	Burgarella et al.	95/11.5 R
3,728,947	4/1973	Harnden et al.	95/11.5 R

1. An adapter for mountably receiving a packaged linear flashlamp array having a plurality of discrete igniting signal input contact surfaces, said adapter being operative in association with photographic apparatus of a variety including a housing, a taking lens mounted thereon, mounting means for supporting non-linear flash means, said mounting means including igniting output terminals connectable in igniting rela-

tionship with said flash means, and a shutter mechanism having a synchronization switch actuable in response to shutter actuation to effect an ignition of said flash means from said output terminals, said adapter comprising:

means mountable upon said housing for receiving and supporting said packaged linear flash array and including contact means discretely connectable in circuit completing relationship with select ones of said contact surfaces;

a flash firing circuit coupled in operative relationship with said receiving and supporting means, said circuit having an actuating input and further having an activating input for selective energization from a power supply and being



operative in the presence of said selective energization to ignite said flashlamps within said array through said contact means in response to receipt at said actuating input of a firing signal of predetermined voltage characteristic;

means for establishing said electrical power supply when connected to a battery source; and

control means coupled with said activating input, said actuating input, said power supply means and said synchronization switch, for effecting the said energization of said firing circuit and for deriving said firing signal at said actuating input in response to said actuation of said synchronization switch.

B 420,148

AUTOMATIC CAMERA SETTING APPARATUS

Itsuki Moriyama, and Shigeo Enomoto, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Nov. 29, 1973, Ser. No. 420,148

Claims priority, application Japan, Nov. 30, 1972, 47-120008

Int. Cl. G03b *3/12*

U.S. Cl. 354—195 **10 Claims**

Group Art Unit 211

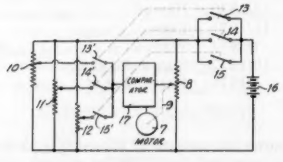
References Cited

UNITED STATES PATENTS

3,052,156	9/1962	Blatherwick	355/62
3,625,607	12/1971	Bravenec	355/56
3,735,686	5/1973	Brewer et al.	95/44 R

FOREIGN PATENTS OR APPLICATIONS

902,909	8/1962	Great Britain	355/56



1. In a photographic apparatus for photographing an object automatically with at least one predetermined camera setting when a camera has its optical axis displaced from a location out of line with to a location in alignment with the object, a pair of means consisting of a reference means and a movable means movable with respect to said reference means, said movable means carrying the camera for moving the camera with said movable means to displace the optical axis of the camera from a location out of line with an object to be photographed to a location where said optical axis is in line with the object to be photographed, manually adjustable detecting means, connected in part to one and in part to the other said pair of means, for automatically providing an operating signal when the camera is displaced to a position where its optical axis is aligned with the object, and camera control means for storing said predetermined setting, said control means being operatively connected with the camera and said detecting means for responding to said signal to automatically set the camera with said predetermined setting.

B 350,025

ELECTROMAGNETICALLY REGULATED EXPOSURE CONTROL SYSTEM

Christian C. Petersen, Westwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 11, 1973, Ser. No. 350,025

Int. Cl. G03b *7/08, 9/02*

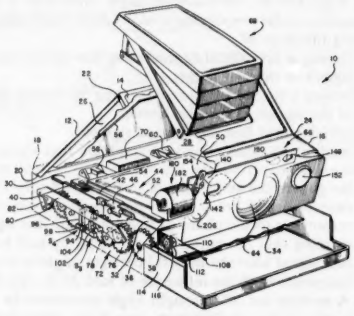
U.S. Cl. 354—271 **31 Claims**

Group Art Unit 211

References Cited

UNITED STATES PATENTS

3,412,660	11/1968	Wasielewski	95/59 X
3,604,330	9/1971	Fahlenberg et al.	95/53
3,633,484	1/1972	Ikegami et al.	95/53
3,744,385	2/1973	Burgarella et al.	95/53 EA X



2. A method of operating a photographic exposure control system to define a controlled exposure value, said system including means responsive to a given level of electrical energization for effecting the displacement of said exposure mechanism from one of its said positions into the other of its said positions, said method including the steps of energizing said displacement effecting means at said given level of electrical energization to effect the displacement of said exposure mechanism means from its said one position into its said other position and displacing said exposure mechanism means from its said other position into its said one position by urging said exposure mechanism means towards its said one position while substantially continuously energizing said displacement effecting means at a level of electrical energization less than said given level of electrical energization so as to retard but not preclude the displacement of said exposure mechanism means from its said other position into its said one position.

14. In an exposure control system of a variety wherein a solenoid including an excitation winding and a plunger is employed to be energized at one current level to cause said

plunger to be retracted toward a position providing a high flux linkage condition within the magnetic circuit of said solenoid, said plunger being driveably associated with an exposure mechanism and spring means such that said mechanism is moved to block a scene light entrance opening when said plunger is retracted and is moved with said plunger by a bias of said spring means to define a variation of aperture values over said opening upon de-energization of said winding, the improvement comprising:

control means for energizing said winding at another current level selected below said one current level substantially throughout said movement under said bias for selectively regulating the rate of said plunger movement under said spring means bias.

B 412,516

AUTOMATIC FILM PROCESSOR REPLENISHMENT SYSTEM

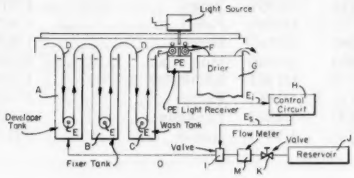
Minoru Kinoshita, and Osami Taniuchi, both of Kyoto, Japan, assignors to LogEtronics Inc., Springfield, Va.

Filed Nov. 2, 1973, Ser. No. 412,516
Claims priority, application Japan, Mar. 7, 1973, 48-26197
Int. Cl. G03d *13/00*
U.S. Cl. 354—298 **7 Claims**
Group Art Unit 211

References Cited

UNITED STATES PATENTS

3,559,555	2/1971	Street	354/298
3,561,344	2/1971	Frutiger et al.	354/298
3,763,758	10/1973	Manack et al.	354/298 UX
3,787,689	1/1974	Fidelman	354/298 X



1. A control circuit for controlling chemical replenishment in an automatic film processor, comprising sensor means responsive to the image density in a sheet of film being processed for producing a sensing signal proportional to said density, means coupling said sensing signal to the input of an integrator means, said integrator means being operative to integrate said signal during a predetermined time interval, a reference source having a polarity opposite that of said sensing signal, means responsive to elapse of said predetermined time interval for coupling said source to the input of said integrator means to cause the sensing signal already integrated by said integrator means and any further sensing signal subsequently applied to the input of said integrator means to be differentially integrated and the output of said integrator means reduced in value toward a predetermined reference level, means responsive to elapse of said predetermined time interval for initiating flow of said replenishment chemical, and means responsive to reduction of the output of said integrator means to said reference level for terminating flow of said replenishment chemical.

B 361,604

LIQUID CIRCULATING SYSTEM FOR PHOTOGRAPHIC FILM PROCESSING TANKS

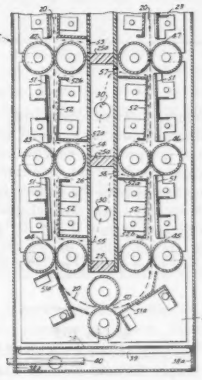
Alfred J. Gaskell, Hopkins, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed May 18, 1973, Ser. No. 361,604
Int. Cl. G03d *3/06*
U.S. Cl. 354—321 **8 Claims**
Group Art Unit 211

References Cited

UNITED STATES PATENTS

2,837,988	6/1958	Pavelle	95/89 D
3,192,845	7/1965	Schmidt	95/89 R
3,311,039	3/1967	Lucas	95/94 R
3,344,729	10/1967	Kitrosser	95/89 R
3,492,933	2/1970	Knibiehly et al.	95/94 R
3,532,048	10/1970	Hope	95/94 R
3,593,642	7/1971	Becheiraz	95/94
3,623,416	11/1971	Anderberg	95/89 R
3,641,911	2/1972	Aelterman et al.	95/94 R



1. In a photographic film processing tank with processing liquid therein and including means for transporting a web of film in a guided film path through said tank;

a system for circulating portions of the film processing liquid in a predetermined flow path within the tank, said system comprising

an intake manifold located within the tank and having the major portion thereof disposed below the surface of the processing liquid in the tank and including

side wall portions having a plurality of intake openings disposed in close association to the film path on the emulsion side thereof,

liquid flow control means within the tank and disposed outside of said manifold and defining a liquid flow path generally parallel to and adjacent said film path

the position of the intake openings being such that the liquid is drawn through said openings at the downstream end of its flow path to cause the liquid to flow through said flow path in the same direction of travel as said film,

means for producing negative pressure in the manifold to withdraw liquid from the tank into the manifold through said openings, and

means for intorducing the withdrawn liquid back into the processing tank at a location remote from said flow path.

B 421,026

GERMANIUM DOPED GaAs LAYER AS AN OHMIC CONTACT

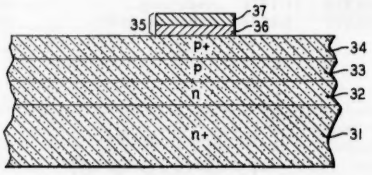
Doris Rahb Ketchow, Kenilworth, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 3, 1973, Ser. No. 421,026
Int. Cl. H01l 3/20
U.S. Cl. 357—63 **6 Claims**
Group Art Unit 254

References Cited

UNITED STATES PATENTS

3,745,423	7/1973	Hiroyuki	357/17
3,746,943	7/1973	Aoki	357/3
3,770,518	11/1973	Rosztoczy	148/171



1. A semiconductor device comprising a body of Group III–V compound semiconductor material, including an epitaxial surface layer of p-type GaAs which surface layer includes Ge as the principal conductivity determining dopant and a metallic body in contact with the surface layer characterized in that the Ge is included in sufficient quantity to provide a carrier concentration of at least 3.5×10^{19} p-type carriers per cubic centimeter, and in which device the blocking voltage between the surface layer and the metallic body is less than 50 millivolts.

B 344,203

IMAGE DISPLAY SYSTEM

Kaoru Sasabe, Ikeda; Hiroaki Kotera, Takatsuki; Toshihide Hane, Sakai, and Nobuyoshi Kihara, Amagasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 23, 1973, Ser. No. 344,203
Claims priority, application Japan, Mar. 25, 1972, 47-30197; Mar. 25, 1972, 47-30198; Mar. 31, 1972, 47-32925; Mar. 31, 1972, 47-32926; Mar. 31, 1972, 47-32927; Apr. 13, 1972, 47-37478
Int. Cl. H04n 9/02
U.S. Cl. 358—6 **7 Claims**
Group Art Unit 233

References Cited

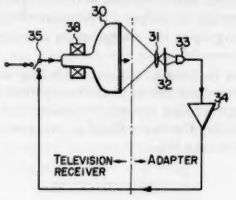
UNITED STATES PATENTS

2,214,072	9/1940	Biedermann	178/6.8
2,297,461	9/1942	Dillenburger	178/DIG. 28
2,520,507	8/1950	Marcy	178/6.8
3,008,001	11/1961	Reith	178/DIG. 28
3,249,691	5/1966	Bigelow	178/DIG. 28
3,251,936	5/1966	Berchtold	178/DIG. 28

FOREIGN PATENTS OR APPLICATIONS

842,788	7/1960	Great Britain	178/DIG. 28

1. An image display system comprising a scan/display device capable of scanning with a flying spot, a picture information carrier scanned by the flying spot of said scan/display device, a photoelectric transducer for converting light modified by said picture information carrier into a corresponding electric signal, means, responsive to the electric signal produced from said photoelectric transducer, for amplifying said electric signal and feeding back positively an output signal corresponding to the amplified electric signal, said means for amplifying including a stabilizing device for limiting the output signal at a predetermined level, and means for leading the output signal produced from said amplifying means and video signals from video signal generators either simultaneously or selectively to said scan/display device.



B 239,289

COLOR SIGNAL CORRECTION IN A COLOR FACSIMILE

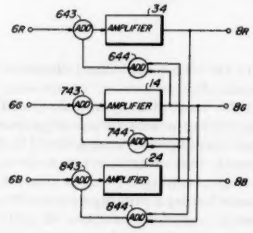
Kaoru Sasabe, Ikeda; Yoshihiro Okino, Kyoto, and Heijiro Hayami, Takatuski, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 786,267, Dec. 23, 1968, abandoned. This application Mar. 29, 1972, Ser. No. 239,289
Int. Cl. H04n 1/46
U.S. Cl. 358—75 **3 Claims**
Group Art Unit 233

References Cited

UNITED STATES PATENTS

2,316,581	4/1943	Hardy et al.	178/5.2 A
2,434,561	1/1948	Hardy et al.	178/5.2 A
2,727,940	12/1955	Moe	178/5.2 A
2,863,938	12/1958	Evans et al.	178/5.2 A
2,879,326	3/1959	Yule	178/5.2 A
2,932,691	4/1960	Pule	178/5.2 A
2,939,908	6/1960	Shapiro	178/5.2 A
2,947,805	8/1960	Moe et al.	178/5.2 A
2,968,214	1/1961	Kilminster	178/5.2 A
2,981,792	4/1961	Farber	178/5.2 A
3,098,895	7/1963	Loughlin	178/5.2 A
3,557,303	1/1971	Jordan	178/5.2 A



1. A color correction method for color facsimile transmission comprising the steps of: separating color signals of red, green and blue from a composite color signal obtained from an original picture signal; generating a plurality of carrier signals of a common frequency and phase from a common carrier generator; modulating said carriers with said separated color signals by irradiating the original picture with a light source whose intensity is modulated in synchronization with

said common carrier frequency; amplifying the modulated carrier signals in amplifying means; and electrically correcting said color signals by processing said modulated and amplified carrier signals in a masking matrix circuit arranged to form feedback loops.

2. A color correction method for color facsimile transmission comprising the steps of: separating color signals of red, green and blue from a composite color signal obtained from an original picture signal; generating a plurality of carrier signals of a common frequency and phase from a common carrier generator; modulating said carriers with said separated color signals; amplifying the modulated carrier signals in amplifying means; grouping said amplified signals into combinations of two amplified signals each; adding said two amplified signals in each combination together; and adding the outputs of each of said combinations to the input of the corresponding amplifying means which produces an amplified signal not grouped with the combination whose output is being added to said corresponding amplifying means input.

B 333,876

CONTACT DUPLICATION OF MAGNETIC SIGNALS UTILIZING A DUAL-MATERIAL INTERMEDIATE INCLUDING BOTH LOW T_c AND HIGH T_c MATERIAL

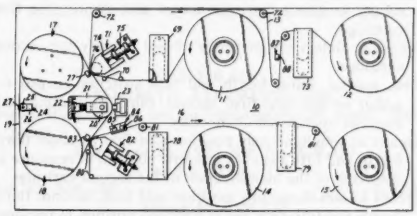
Jack C. Chapman, Bloomington, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 20, 1973, Ser. No. 333,876
Int. Cl. G11b *5/86, 23/00*
U.S. Cl. 360—17 **15 Claims**
Group Art Unit 235

References Cited

UNITED STATES PATENTS

3,699,269	10/1972	Smaller	179/100.2 E
3,725,611	4/1973	Smaller	179/100.2 A



1. Method of making direct-image copies of magnetic signals from a master magnetic recording medium onto a copy magnetic recording medium utilizing an intermediate comprising a backing member of low permeability and a magnetizable face comprising a first magnetizable material having high H_c relative to the H_c of the copy medium and a low Curie temperature T_c, and a second magnetizable material having relatively high T_c and low H_c relative to the H_c of the master medium, said method comprising the sequential steps of

1. copying signals from the master medium onto the high T_c material of the intermediate by magnetically stimulated contact duplication,
2. copying the signals from the high T_c material onto the low T_c material of the intermediate by heating the materials to a temperature between approximately the low T_c and below the high T_c and cooling to below the low T_c, and
3. copying the signals from the low T_c material of the intermediate onto the copy medium by magnetically stimulated contact duplication.

6. System for making direct-image copies of magnetic signals from a master magnetic recording medium onto a copy magnetic recording medium, which system comprises:

1. an intermediate comprising a backing member of low permeability and a magnetizable face comprising a first magnetizable material having high H_c relative to the H_c of the copy medium and a low Curie temperature T_c and a second magnetizable material of relatively high T_c and low H_c relative to the H_c of the master medium,
2. means for moving the master medium and the intermediate in intimate face-to-face contact through a magnetic field for stimulating the high T_c material of the intermediate to copy the signals onto the high T_c material,
3. means for heating the magnetizable material of the intermediate to a temperature at least approximating the low T_c but below the high T_c and for cooling to a temperature below said low T_c to copy the signals from the high T_c material onto the low T_c material of the intermediate, and
4. means for moving the intermediate and the copy medium in intimate face-to-face contact through a magnetic field for stimulating the copy medium the signals from the low T_c material onto the copy medium.

11. A magnetic recording medium having a backing member of low permeability and a magnetizable face comprising: a first magnetizable material having a Curie temperature T_c of 50°–350°C and an H_c at room temperature of at least 500 oersteds, and

a second magnetizable material having a T_c at least 50°C higher than that of the first mentioned magnetizable material and an H_c at room temperature of 100–150 oersteds,

which medium is useful as an intermediate transfer medium for copying magnetic signals from a master recording medium having an H_c higher than that of the second magnetizable material onto a copy magnetic recording medium having an H_c lower than that of the first magnetizable material.

B 262,287

DIGITAL RECORDING AND REPRODUCING SYSTEM EMPLOYING ΔPCM

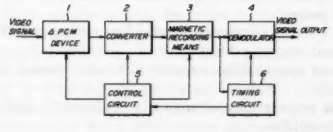
Hirokazu Yoshino, Katano; Tetsuo Yamaguchi, Hirakata; Eiichi Tsuboka, Nara, and Hiroshi Hatano, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed June 13, 1972, Ser. No. 262,287
Claims priority, application Japan, June 18, 1971, 46-44297; June 18, 1971, 46-44318; Dec. 8, 1971, 46-99745
Int. Cl. G11b *5/02*
U.S. Cl. 360—32 **3 Claims**
Group Art Unit 237

References Cited

UNITED STATES PATENTS

3,311,904	3/1967	Talsoe	340/174.1 G
3,319,013	5/1967	Hodder	179/100.2 R
3,388,375	6/1968	Sloughter	179/100.2 R X
3,435,135	3/1969	Yasuoka et al	179/100.2 R X
3,449,757	6/1969	Law	179/100.2 R X
3,573,744	4/1971	Rigazio	340/172.5
3,588,836	6/1971	Frazier, Jr.	340/174.1 G
3,596,253	7/1971	Ruth et al.	340/172.5
3,641,503	2/1972	Cullen	340/172.5
3,700,320	10/1972	Brewer et al.	340/172.5 X



1. A magnetic recording and reproducing system comprising means for converting a signal to be recorded into an

ΔPCM code of binary code signals arranged in parallel in *n* bits, means for converting said binary code signals arranged in parallel in *n* bits into code signals corresponding to said respective bits in the form of an NRZ code, and means for recording and reproducing signals from the code signals in an NRZ code of *n* channels on a recording medium of at least n channels by magnetic heads corresponding to the respective channels.

B 350,589

CARTRIDGE TAPE PLAYER

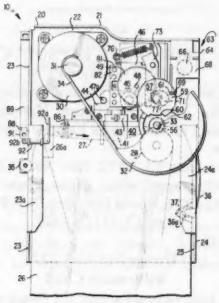
Minoru Tozawa, No. 1, Koaza-Zusho, Oaza-Baba Nagaokacho, Otokuni-gun, Kyoto, Japan

Filed Apr. 12, 1973, Ser. No. 350,589
Claims priority, application Japan, Apr. 20, 1972, 47-39839
Int. Cl. G11b *23/18, 21/08, 23/04*
U.S. Cl. 360—94 **1 Claim**
Group Art Unit 235

References Cited

UNITED STATES PATENTS

3,484,110	12/1969	Takemi et al.	179/100.2 CA
3,532,347	10/1970	Parsons	179/100.2 CA
3,548,114	12/1970	Fish	179/100.2 CA
3,552,751	1/1971	Kelso	179/100.2 Z
3,640,538	2/1972	Tolar	274/4 G
3,656,761	4/1972	Laschenski	274/4 G
3,702,192	11/1972	Huber	179/100.2 CA
3,730,532	5/1973	Miyamoto	179/100.2 CA
3,764,754	10/1973	Mizumoto	179/100.2 CA



1. A cartridge tape player for reproducing a first cartridge having four programs with two tracks per program and for reproducing a second cartridge having two programs with four tracks per program comprising:

a first magnetic head,

a first pre-amplifier connected to said first magnetic head,

first volume control means connected to said first pre-amplifier,

a first power amplifier connected to said first volume control means,

a first speaker connected to said first power amplifier,

a second magnetic head,

a second pre-amplifier connected to said second magnetic head,

second volume control means connected to said second pre-amplifier,

a second power amplifier connected to said second volume control means,

a second speaker connected to said second power amplifier,

a third magnetic head,

a third pre-amplifier connected to said third magnetic head,

third volume control means connected to said third pre-amplifier,

a third power amplifier connected to said third volume control means,

a third speaker connected to said third power amplifier,

a fourth magnetic head,

a fourth pre-amplifier connected to said fourth magnetic head,

fourth volume control means connected to said fourth pre-amplifier,

a fourth power amplifier connected to said fourth volume control means,

a fourth speaker connected to said fourth power amplifier,

a first display lamp to indicate when a first program of the first or second cartridge is being reproduced,

a second display lamp to indicate when a second program of the first or second cartridge is being reproduced,

third display lamp to indicate when a third program of the first cartridge is being reproduced.

a fourth display lamp to indicate when a fourth program of the first cartridge is being reproduced,

first selection means for selecting reproduction of the first program of the first or second cartridge,

second selection means for selecting reproduction of the second program of the first or second cartridge,

third selection means for selecting reproduction of the third program of the first cartridge,

fourth selection means for selecting reproduction of the fourth program of the first cartridge,

said first, second, third and fourtth magnetic heads being arranged in a four head assembly wherein each head is spaced from adjacent heads by substantially a two track distance,

means responsive to the detection of the end of the each program of the first or second cartridge to displace said magnetic head assembly in a direction perpendicular to the track length for reproduction of successive programs,

means to detect the presence of and identify the first cartridge,

means to detect the presence of and identify the second cartridge,

first, second, third, fourth and fifth switches ganged together so that said first, second, third, fourth and fifth switches operate simultaneously,

means to simultaneously position said first, second, third, fourth and fifth switches in a first position in response to detection of the identification of the second cartridge,

means to simultaneously position said first, second, third, fourth and fifth switches in a second position in response to the detection of and identification of the first cartridge,

said first switch when in its first position functioning to prohibit illumination of said third and fourth display lamps,

said first switch when in its second position functioning to permit selective lighting of said third and fourth display lamps,

said second switch when in its first position functioning to prohibit selection for reproduction of the third program of the second cartridge,

said second switch when in its second position functioning to permit selection for reproduction of the third program of the first cartridge,

said third switch when in its first position functioning to prohibit selection for reproduction of the fourth program of the second cartridge,

said third switch when in its second position functioning to permit selection for reproduction of the fourth program of the first cartridge,

said fourth switch when in its first position functioning to permit the second speaker to reproduce the signal picked up by the second magnetic head,

said fourth switch when in its second position functioning to disconnect the second magnetic head from said second

speaker and functioning to connect the first magnetic head to said second speaker,

said fifth switch when in its first position functioning to permit the fourth speaker to reproduce the signal picked up by said fourth magnetic head,

said fifth switch when in its second position functioning to disconnect the fourth magnetic head from said fourth speaker and functioning to connect the third magnetic head to said fourth speaker whereby,

the first program of the first cartridge is reproduced from the first and fifth tracks by the first and third heads which are coupled to the first and second speakers, and third and fourth speakers respectively while the first display lamp is illuminated,

the second program of the first cartridge is reproduced from the second and sixth tracks by the first and third heads which are coupled to the first and second speakers, and third and fourth speakers respectively while the second display lamp is illuminated,

the third program of the first cartridge is reproduced from the third and seventh tracks by the first and third heads which are coupled to the first and second speakers, and third and fourth speakers respectively while the third lamp is illuminated,

the fourth program of the first cartridge is reproduced from the fourth and eighth tracks by the first and third heads which are coupled to the first and second speakers, and third and fourth speakers respectively while the fourth display lamp is illuminated,

the first program of the second cartridge is reproduced from the first, third, fifth and seventh tracks by the first, second, third and fourth heads respectively which are coupled to the first, second, third and fourth speakers respectively while the first display lamp is illuminated, and

the second program of the second cartridge is reproduced from the second, fourth, sixth and eighth tracks by the first, second, third, and fourth heads respectively which are coupled to the first, second, third and fourth speakers respectively while the second display lamp is illuminated.

B 370,453

MAGNETIC RECORDING DISC

Tetsuo Hino, Osaka, and Susumu Hashiguchi, Izumi, both of Japan

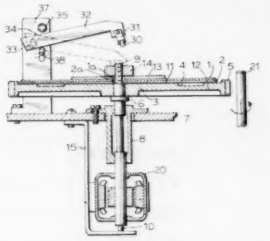
Filed June 15, 1973, Ser. No. 370,453
Int. Cl. G11b *5/16*
U.S. Cl. 360—99 **6 Claims**
Group Art Unit 235

References Cited

UNITED STATES PATENTS

3,212,075	10/1965	Damerao et al.	179/100.2 A
3,417,389	12/1968	Dike	179/100.2 A
3,488,646	1/1970	Sugaye et al.	179/100.2 A
3,537,083	10/1970	Voth	179/100.2 A
3,646,533	2/1972	Rosenblum	179/100.2 A
3,729,720	4/1973	Darling et al.	179/100.2 A
3,731,292	5/1973	Kelley	179/100.2 A
3,751,598	8/1973	Mdraokz	179/100.2 A

1. A magnetic recording disc comprising a rotating disc adapted to be rotated by a driving means and having a first surface and a second surface indented from said first surface, a flexible sheet mounted on said first surface of said rotating disc and extending over said first surface and said second surface, a magnetic sheet mounted on said flexible sheet, on which signals can be recorded and from which they can be reproduced by a magnetic head, and means attachable to said rotating disc for holding at least a part of said magnetic sheet together with said flexible sheet on said rotating disc over said first surface, whereby when said flexible sheet is held on said rotating disc and supporting said magnetic sheet, the portion of said magnetic sheet overlying said second surface is in close contact with said magnetic head during a recording or reproducing operation.



6. A magnetic recording disc as claimed in claim **1** wherein said magnetic sheet and said flexible sheet are integral and comprise a plastic base and a coating of magnetic material thereon.

B 371,787

THREE-LEGGED MAGNETIC RECORDING HEAD USING A MAGNETORESISTIVE ELEMENT

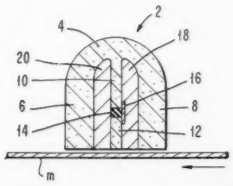
David A. Thompson, Somers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 212,591, Dec. 27, 1971, abandoned.
This application June 20, 1973, Ser. No. 371,787
Int. Cl. G11b *05/12, 5/22*
U.S. Cl. 360—113 **28 Claims**
Group Art Unit 235

References Cited

UNITED STATES PATENTS

2,712,601	6/1955	Reinwald	179/100.2 CH
3,163,721	12/1964	Kuhrt et al.	179/100.2 CH
3,355,727	11/1967	Gaubatz	179/100.2 C
3,493,694	2/1970	Hunt	179/100.2 CH
3,568,180	2/1971	Rosch	179/100.2 CH
3,624,313	11/1971	Dekoster	179/100.2 CH
R26,610	6/1969	Dekoster	179/100.2 CH



18. A magnetic head containing two outer permeable shielding members, each shielding member having one face essentially in proximity with the magnetic recording medium and each having one inner face essentially perpendicular to said magnetic recording medium, said inner faces being substantially parallel, and defining a magnetic gap, and within said gap a magnetically permeable member containing a highly permeable, thin film magnetoresistive layer, said magnetoresistive layer being substantially aligned in the direction of its width w with a plane essentially parallel to said inner faces of said shielding members, and in a flux-coupling relationship with said magnetic recording medium, said gap being less than said width w.

REISSUE PATENTS

GRANTED JANUARY 28, 1975

ERRATA

For CLASS	See PATENT NO.
070–363	28,319
134–167	28,320
175–005	28,322
180–022	28,324
229–055	28,317
229–055	28,318
210–044	28,323
340–274	28,321

REISSUES

JANUARY 28, 1975

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,317

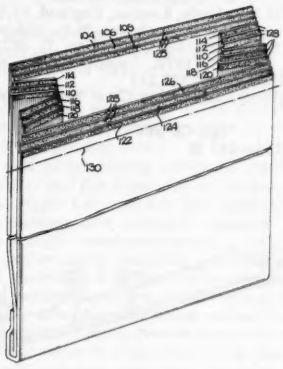
GUSSETED TYPE BAGS

John J. Goodrich, Pensacola, Fla., assignor to St. Regis Paper Company, New York, N.Y.

Original No. 3,776,451, dated Dec. 4, 1973, Ser. No. 257,253, May 26, 1972, which is a division of application Ser. No. 467,416, June 28, 1965, which is a continuation-in-part of application Ser. No. 169,287, Jan. 29, 1962. Application for reissue Mar. 8, 1974, Ser. No. 449,489

Int. Cl. B65d *31/02, 33/02*

U.S. Cl. 229—55 6 Claims



1. A bag of tubular form comprising a plurality of at least three contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having an exposed front portion and an exposed rear portion which is stepped above said front portion and adapted to overlap said front portion within the overlapped area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, at least some of the bag plies being stepped in said front and rear surface portions to provide exposed portions thereof, a heat reactive bonding agent in a dormant state substantially covering said exposed gusset portions and front and rear surface portions at said end of the tube when said bag is in its assembled condition, and said bonding agent being reactivatable to close said bag end, the opposite end of said tube being the reverse of said one end and being folded over and adhered to a surface of said tube by means of said bonding agent.

28,318

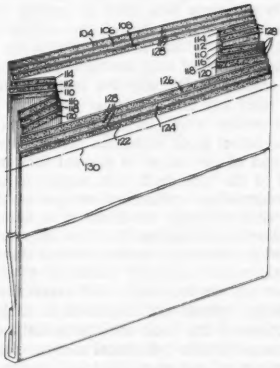
GUSSETED TYPE BAGS

John J. Goodrich, Pensacola, Fla., assignor to St. Regis Paper Company, New York, N.Y.

Original No. 3,687,356, dated Aug. 29, 1972, Ser. No. 467,416, June 28, 1965, which is a continuation-in-part of abandoned application Ser. No. 169,287, Jan. 29, 1962. Application for reissue Mar. 8, 1974, Ser. No. 449,490

Int. Cl. B65d *31/02*

U.S. Cl. 229—55 4 Claims



1. A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and a stepped rear portion adapted to overlap said front surface within the overlap area of said front and rear surfaces at said end of the tube when said bag is in its assembled condition, and with the bag plies extending progressively and successively one beyond another at each surface portion and each gusset portion at said bag end, and a bonding agent in a dormant state being applied on each surface portion and each gusset portion at said bag end, and said bonding agent being reactivatable to close said bag subsequent to a later bag filling operation.

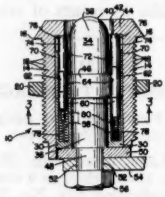
28,319
AXIAL PIN TUMBLER LOCK ASSEMBLY AND COMBINATION RESET KEY THEREFOR

William J. Kerr, Madison, Wis., assignor to Chicago Lock Co., Chicago, Ill.

Original No. 3,756,049, dated Sept. 4, 1973, Ser. No. 172,991, Aug. 19, 1971. Application for reissue July 10, 1974, Ser. No. 487,052

Int. Cl. E05b *25/00, 29/00*

U.S. Cl. 70—363 3 Claims



1. An axial pin tumbler lock comprising, in combination, a generally cylindrical open-ended tubular lock barrel having at its front end a fixed inturned rim flange defining a front central and circular key opening, a rigid, functionally one-piece lock shaft projecting centrally and axially through said lock barrel and embodying a front cylindrical section which projects forwardly and terminates in the vicinity of said central key opening and constitutes a centerpost for selective reception thereover of a tubular reset key and a tubular operating key, a rear cylindrical section which terminates adjacent to the rear end of the barrel [and embodies means between it and said rear end of the barrel to prevent forward axial displacement of the lock shaft with respect to said barrel], and an intermediate cylindrical section in the form of a radial lock shaft flange the diameter of which is greater than the diameter of either the front or rear cylindrical section and is also equal to the internal diameter of the lock barrel, *means operative normally to prevent axial displacement of the lock shaft with respect to the barrel,* locking means operatively connected to said rear cylindrical section of the lock shaft exteriorly of the lock barrel, a non-rotatable cylindrical rear tubular lock cylinder encompassing said rear cylindrical section of the lock shaft within the barrel and fixedly secured to the latter, a rotatable cylindrical front tubular reset cylinder disposed within the front portion of the barrel and encompassing said centerpost and through which the latter projects axially and beyond which it projects forwardly, said rotatable front reset cylinder, rotatable intermediate radial lock shaft flange and non-rotatable rear lock cylinder being provided with circumferentially spaced longitudinally extending bores which are movable into and out of alignment with one another upon relative angular shifting movement therebetween, follower tumblers, driver tumblers and reset tumblers slidable in the bores in said non-rotatable rear lock cylinder, lock shaft flange, and front reset cylinder respectively, provided with spring means for urging them forwards, and normally projecting across the interfacial planes between said flange and cylinders and preventing relative rotation between the radial lock shaft flange and each cylinder, certain of said driver tumblers being of different length and certain of said reset tumblers being of different length, said front reset cylinder, except only for the provision of said reset tumblers, being freely rotatable on said centerpost throughout an arc of 360°, the front ends of said reset tumblers being partially overhung by said fixed inturned flange, said driver tumblers and follower tumblers being effective when meeting on the interfacial plane between the radial lock shaft flange and the non-rotatable rear lock cylinder to release the lock shaft flange from said rear lock cylinder for rotation of the lock shaft as a whole and also its associated locking means, said reset and driver tumblers being effective when meeting on the interfacial plane between the lock shaft flange and front reset cylinder to release the latter from the former for rotation relatively thereto, a reset key having a tubular body telescopically receivable over said centerpost forwardly of the reset cylinder and having bitting embodying shoulders which are engageable with said reset tumblers and effective to shift said reset and driver tumblers to their positions of reset cylinder release, and a plurality of similar operating keys, each of which has bitting different from the other operating keys and also from that of the reset key and embodies shoulders engageable with the reset tumblers and effective through said reset tumblers to shift the driver and follower tumblers to their positions of lock shaft flange release, depending upon the relative angular positions assumed by said reset cylinder and lock shaft flange.

28,320
CLEANING OF THE INTERIOR OF STORAGE TANKS

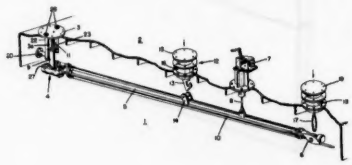
David J. Baldwin, London, England, by Sybron Corporation, Rochester, N.Y., assignee

Original No. 3,625,234, dated Dec. 7, 1971, Ser. No. 58,599, July 27, 1970. Application for reissue Nov. 19, 1972, Ser. No. 310,213

Claims priority, application Great Britain, July 30, 1969, 38,282/69

Int. Cl. B08b *3/02, 9/08*

U.S. Cl. 134—167 R 15 Claims



1. Apparatus for cleaning the interior of a tank comprising a mounting adapted to be carried by the top of said tank and extending therein, a tank-cleaning machine connected to said mounting, means for introducing a flow of liquid to said machine from outside said tank and pivot means including a rotary pipe coupling permitting said machine to be movable between an inoperative position where it can be housed within said tank and an operative position where it extends into the tank.

28,321
CABINET WITH JAMB SWITCH AND ALARM SYSTEM

Joseph Vosbikian and James T. Vosbikian, Philadelphia, Pa., assignors to Hardware & Industrial Tool Co., Inc., Philadelphia, Pa.

Original No. 3,696,374, dated Oct. 3, 1972, Ser. No. 75,572, Sept. 25, 1970. Application for reissue Mar. 21, 1974, Ser. No. 453,416

Int. Cl. G08b *13/06*

U.S. Cl. 340—274 9 Claims

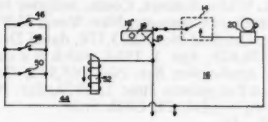
4. In an alarm system for use in protecting window and door openings in a structure of the type employing jamb-responsive switches, a power supply, and an alarm signal device, the combination of

(A) a cabinet;

(B) a triggering assembly mounted within the cabinet and movable relative to the cabinet,

(1) said triggering assembly comprising a trigger bar which has a first end and a second end,

(a) said first end being pivotally connected to the said cabinet,



(b) said trigger bar being formed to provide a stop surface,

(c) said trigger bar being movable from a first position to a second position;

(C) a tripping means assembly associated with the triggering assembly, and including a solenoid and a coil spring,

(1) said solenoid being movable from an initial position to a final position in response to a function of a said jamb responsive switch,

(2) said solenoid pulling the trigger bar about its said pivotal connection to its second position when moved to its final position by function of a jamb operating switch,

(3) said spring biasing between a portion of the cabinet and the trigger bar to continuously urge the trigger bar to its said first position;

(D) an actuating arm rotatably mounted upon the cabinet through a mechanical timer,

(1) said actuating arm being rotatable from a preset position to a set position to an alarm actuating position through a timed cycle of operation,

(2) said actuating arm being retained in the said set position by engagement against the said stop surface when the trigger bar is in its first position,

(3) said actuating arm being rotated to its alarm actuating position when the solenoid pulls the trigger bar to its second position to disengage the actuating arm from the stop surface; and

(E) an alarm circuit including the power supply, the jamb responsive switches, the solenoid and the alarm signal device,

(1) said alarm circuit including a normally open actuating switch,

(a) said actuating switch being closed by the actuating arm when the actuating arm is permitted to rotate to its alarm actuating position when the trigger bar is moved to its second position,

(b) said alarm signal device being powered to emit a warning sound when the actuating switch is closed.

28,322

FLOATING RIG MOTION COMPENSATOR

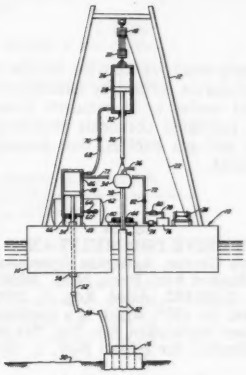
Ernest A. Mori, Hampton Township, Allegheny County, Pa., assignor to Gulf Research & Development Co., Pittsburgh, Pa.

Original No. 3,687,205, dated Aug. 29, 1972, Ser. No. 84,579, Oct. 28, 1970. Application for reissue Apr. 4, 1974, Ser. No. 457,790

Int. Cl. E21b *7/12, 19/08*

U.S. Cl. 175—5 **9 Claims**

1. In apparatus for suspending a tool in a well from a floating rig having a traveling block suspended therefrom, the improvement comprising a suspending cylinder *adapted to be* supported by the traveling block, a suspending piston slidable in the suspending cylinder, *a piston rod extending downwardly from the suspending piston through the suspending cylinder for connection to the tool,* [said tool being suspended from the suspended piston and extending downwardly into the well,] a compensating cylinder *adapted to be* mounted on the rig, a compensating piston slidable in the compensating cylinder, connecting means extending downwardly from the compensating piston *for connection* [and connected] to the marine floor for limiting upward movement of the compensating piston, means for supplying compressed gas into the compensating cylinder below the compensating piston to maintain the connecting means under tension and the compensating piston at its maximum elevation above the marine floor, an equalizing conduit extending from the compensating cylinder above the compensating piston to the suspending cylinder below the suspending piston, the effective cross-sectional area of the suspending cylinder below the suspending piston being equal to the cross-sectional area of the compensating cylinder above the compensating piston, and *means for maintaining* a hydraulic fluid in the suspending cylinder below the suspending piston and in the compensating cylinder above the compensating piston.



28,323

CONTINUOUS CLARIFICATION-FILTRATION METHOD

Rene N. Silva, 110 S. Maple Ave., Ridgewood, N.J. 07450

Original No. 3,642,618, dated Feb. 15, 1972, Ser. No. 765,507, Oct. 7, 1968. Application for reissue Feb. 14, 1973, Ser. No. 332,412

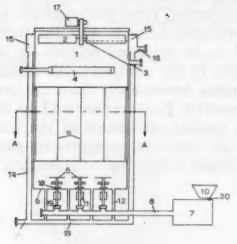
Int. Cl. B03d *1/00*

U.S. Cl. 210—44 **4 Claims**

1. A method for clarifying liquid[,] containing matter to be removed therefrom, said matter being selected from the group consisting of *floc,* fibers, *partially or totally formed floc,* and partically or totally flocculated fibers, said method comprising the steps of:

1. introducing into said liquid a flow of gas bubbles having contained within the individual bubbles at least one powdered chemical particle having an electrical charge of the opposite polarity as the matter to be removed from the liquid to be clarified, said powdered chemical also being a flocculating agent for the matter to be removed in the event said matter to be removed is not otherwise flocculated;

2. providing means to insure uniform mixing of said gas bubbles throughout said liquid to be clarified; and



3. subsequently removing from the surface of said liquid the conglomerate formed by adherence of said now flocculated matter to be removed from said liquid with the powdered chemicals introduced into said liquid in said gas bubbles, thus leaving a clarified liquid behind.

28,324

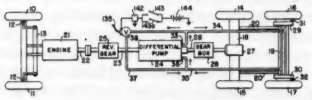
HYDRAULIC DRIVE FOR MULTI-AXLE VEHICLES

Clarence Kirk Greene, Arlington Apartments, 100 N. Arlington Ave., Reno, Nev. 89501

Original No. 3,680,652, dated Aug. 1, 1972, Ser. No. 106,606, Jan. 14, 1971, which is a continuation-in-part of abandoned application Ser. No. 793,468, Jan. 23, 1969. Application for reissue Nov. 1, 1973, Ser. No. 411,727

Int. Cl. B60k *17/14*

U.S. Cl. 180—22 **18 Claims**



1. In [a] self-propelled vehicle *means* having a power plant and a plurality of ground-engaging driving means situated on different axes which are displaced along the length of the vehicle *means*, a hydraulic drive system which comprises:

a. a differential pump having a power input shaft drivenly connected to said power plant, a positive-displacement pump having a fixed displacement, a high-pressure fluid outlet, a fluid inlet, a pump output shaft, and mechanical reacting means for driving said output shaft at a speed which varies, in relation to the speed of the said input shaft, inversely with the quantity of fluid flowing through said outlet and inlet,

b. means mechanically and drivingly connecting said pump output shaft to at least one driving means on one of said axes, and

c. a positive-displacement hydraulic motor having fluid intake and discharge openings connected by duct means respectively to said outlet and inlet of the pump, and a motor output shaft which is drivingly connected to at least one driving means on [the other] *another* of said axes.

28,325

METHOD OF CHELATING WITH AN ETHER-GROUP-CONTAINING SEQUESTERING AGENT

Leroy A. White, Somers, Conn., assignor to Lever Brothers Company, New York, N.Y.

No Drawing. Original No. 3,293,176, dated Dec. 20, 1966, Ser. No. 356,629, Apr. 1, 1964, which is a continuation-in-part of application Ser. No. 765,924, Oct. 8, 1958. Application for reissue June 1, 1972, Ser. No. 258,821

Int. Cl. C02b *5/06*

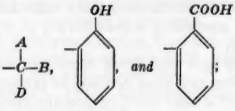
U.S. Cl. 210—58 **14 Claims**

20. The method of treating a liquid media to chelate ions therefrom which comprises contacting said liquid media with a sequestering agent of the formula:

$$M—O—(CHX)_a(CHY)_b(CHZ)_c—G$$

wherein

M is selected from the group consisting of



X=Y=—H, —COOH

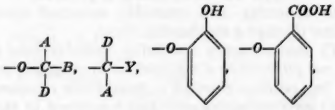
Z=—OH, —COOH

a=b=0, 1

c=0, 1

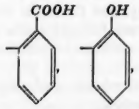
with at least one of a, b and c being 1;

G is selected from the group consisting of

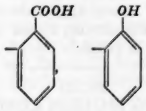


and —O—(CHX)$_a$(CHY)$_b$(CHZ)$_c$—O—M

A, B and D are selected from the group consisting of —CH$_2$COOH, —CH$_2$SO$_3$H, —COOH, —H, —SO$_3$H, —PO$_3$H$_2$, —CHOHCOOH,



and —(CHZ)$_c$(CHY)$_b$(CHX)$_a$—O—M with no more than two of the units A, B and D being —COOH, —H —SO$_3$H, —PO$_3$H$_2$, —CHOHCOOH,



and no more than one of the units A, B and D being —(CHZ)$_c$(CHY)$_b$(CHX)$_a$—O—M.

PLANT PATENTS

GRANTED JANUARY 28, 1975

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,676
AZALEA PLANT
Maggie Lee Efird, Albermarle, N.C., assignor of a fractional part interest to Daniel J. Cagle, Seagrove, N.C.
Filed Aug. 6, 1973, Ser. No. 385,870
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—55 **1 Claim**

1. A new and distinct variety of azalea plant of the hardy evergreen type, substantially as herein shown and described, characterized particularly by white double hose-in-hose flowers.

3,677
ROSE PLANT
William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Dec. 26, 1973, Ser. No. 427,845
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—17 **1 Claim**

1. A new and distinct cultivar of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright habit of growth; leathery foliage; flower color deeper in intensity than its pollen parent without the aging color of flowers of its seed parent.

PATENTS

GRANTED JANUARY 28, 1975

ERRATA

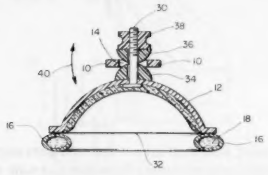
For CLASS	See PATENT NO.
112–121	3,862,493
073–432	3,862,578
215–317	3,862,614
148–006	3,862,749
264–216	3,862,897
117–201	3,862,930
252–422	3,862,962
252–428	3,862,963
252–437	3,862,964
252–555	3,862,965
358–008	3,863,022
188–170	3,863,038
321–011	3,863,125
015–001	3,863,237

PATENTS

GRANTED JANUARY 28, 1975

GENERAL AND MECHANICAL

3,862,451
HEARING PROTECTOR MOUNTING
Roy H. Miller, Hyde Park; Charles J. Boyer, and William R. Bohner, both of Reading, all of Pa., assignors to ESB Incorporated, Philadelphia, Pa.
Filed Oct. 9, 1973, Ser. No. 404,620
Int. Cl. A41d *21/00*
U.S. Cl. 2—209 **5 Claims**

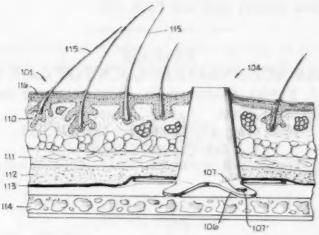


1. In a mounting for a hearing protector the hearing protector comprising at least one earcup the earcup comprising a shell with an ear opening and having a threaded mounting stud extending approximately perpendicularly from the side of the shell away from the ear opening near the center of the shell, and a resilient headband the improvement which comprises:
a. a first positioning member having a convexedly curved surface approximating a portion of a sphere, the positioning member defining a hole about the major axis thereof, the first positioning member being mounted on the stud with the convexedly curved surface facing away from the shell of the ear protector;
b. a second positioning member similar in shape to the first positioning member, located on the stud the convexedly curved surface of the second positioning member facing toward the convexedly curved surface of the first positioning member;
c. the headband being located between said first and second positioning members and defining near its end an opening, the opening being large enough to permit passage of the stud but not sufficient to permit passage of the first or second positioning members; and,
d. a nut, the nut defining a threaded opening mating with the thread of the stud, the nut located on the stud away from the convexedly curved surface of the second positioning member.

3,862,452
HYDROGEL SUBSTITUTES FOR TUBULAR SOMATIC ORGANS
Otto Wichterle; Karel Kliment; Jiri Vacik; Zdenek Ott; Miroslav Stol, all of Praha, and Jan Dvorak, Brno, all of Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia
Division of Ser. No. 633,697, April 26, 1967, abandoned. This application June 21, 1971, Ser. No. 155,318
Claims priority, application Czechoslovakia, May 4, 1966, 2992-66
Int. Cl. A61f *01/00*
U.S. Cl. 3—1 **3 Claims**

1. An artificial substitute somatic organ for prosthetic use of a size to replace defective body vessels comprising a tubular insert formed of a porous tubular knitted textile material embedded within a homogeneous hydrogel which is polymerized in situ and surrounds said insert and is present within and about the pores thereof and chemically bonded to said textile material, said hydrogel comprising a polymer mixture of a first monomer selected from the group consisting of glycol monester of acrylic and methacrylic acid having one olefinic double bond in each molecule and a second monomer comprising a diester of said acrylic and methacrylic acid having at least two olefinic double bonds in each molecule, said second monomer being less than two percent of the total weight of said combined monomers.

3,862,453
APPARATUS FOR MOUNTING HAIR
Garth E. Widdifield, 532 Turtle Creek, North Dr., Indianapolis, Ind. 46227
Division of Ser. No. 276,328, July 31, 1972, Pat. No. 3,811,425, Continuation-in-part of Ser. No. 60,382, Aug. 3, 1970, abandoned. This application Sept. 13, 1973, Ser. No. 396,851
Int. Cl. A61f *1/00*
U.S. Cl. 3—1 **6 Claims**

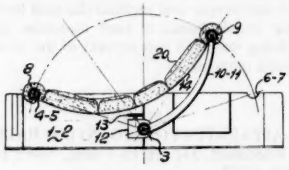


1. An implant for implanting within a scalp to attach a hair piece thereto comprising:
a smoothly tapered main body with a reduced top end for protruding out of said scalp and an enlarged bottom end, said main body having a truncated cone configuration;
a thin base connected to said bottom end and extending outwardly from said bottom end for placement between the skull and periosteum; and,
means mounted to said top end operable to connect to said hair piece.

3,862,454
DIVAN HAVING ADJUSTABLE CATENARY AND HORIZONTAL LAYOUT POSITIONS
Vittorio Mazzucconi, Milan, Italy, assignor to ICF De Padova S.r.l., Milan, Italy
Filed Aug. 6, 1973, Ser. No. 385,977
Claims priority, application Italy, Aug. 26, 1972, 28549/72
Int. Cl. A47c *17/16*
U.S. Cl. 5—47 **5 Claims**

1. An adjustable divan comprising
1. a pair of horizontally extending, substantially parallel cross members defining a first plane,
2. a flexible supporting surface disposed between, and suspended from, the cross members,
3. a third horizontally extending cross member intermediate, and substantially parallel to, the pair of cross members defining the plane,
a. the third cross member extending in another plane lower than the first plane when the latter is horizontal, and
4. bracket means pivotally mounting one cross member of the pair on the third cross member for positioning the one

cross member at a continuous succession of levels between a first postiion wehrein the first plane defined by the pair of cross members extends substantially horizontally to continuously successive positions wherein the one cross member is elevated to successively higher levels above the horizontal plane,



a. the flexible support surface having a length permitting it to be stretched between the pair of cross members in the first position thereof to form a bed and

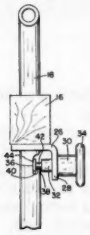
b. the flexible support surface defining a catenary curve in the continuously successive positions to form a combined unitary seat and back rest.

3,862,455

DOUBLE ACTION SAFETY LOCK FOR CRIB SIDES

Edward J. Turski, Baldwinsville, Mass., assignor to Thayer, Inc., Gardner, Mass.

Filed Aug. 27, 1973, Ser. No. 391,951
Int. Cl. A47d 9/00
U.S. Cl. 5—100 **8 Claims**



1. a crib having a drop side and drop side guide rods therefor, a notch in a guide rod and a biassed pin latch on the drop side, the pin entering the notch and locking the drop side in predetermined position against motion thereof on the guide rods,

said pin having a recess therein, and an under cut portion in the bottom of the notch forming an upwardly extending lip on the guide rod, the recess in the pin snapping over the lip preventing withdrawal of the pin the absence of prior upward motion of the drop side.

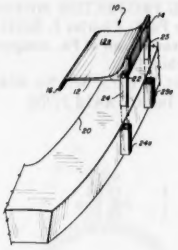
3,862,456

SAILBOAT BALANCE SEAT

Robert E. Fisher, 6422 Olde Stage Rd., Boulder, Colo. 80302, and Leonard S. Matejcic, 707 Brooklawn Dr., Boulder, Colo. 80303

Filed Oct. 5, 1973, Ser. No. 404,040
Int. Cl. B63b 29/00
U.S. Cl. 9—7 **5 Claims**

1. A hiking or balancing seat for small sailing craft comprising a seat member having opposed upper and lower seating surfaces and short legs extending in opposite directions from opposed edges of said surfaces and each at an angle to the plane of said surfaces forming a back for each surface; pivot means at one of said legs of said seat; means for attaching said pivot means on the gunwale of a boat whereby said seat member may be pivoted from an inboard position providing a seat to an outboard extending position outwardly from the gunwale



providing a seat; and stop means for said seat supporting it in one of said positions extending from the gunwale and the craft gunwale supports the seat in the opposite direction.

3,862,457

SEMI AUTOMATIC OILING DIE STOCK

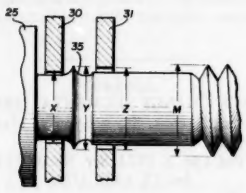
E. LeRoy Swindell, 5 E. 51st St., Apt. 3A, New York, N.Y. 10022, and Michael Peter Amodio, 102 Iven Ave., Pelham Manor, N.Y. 10803

Filed Oct. 26, 1972, Ser. No. 300,987
Int. Cl. B23g 1/00
U.S. Cl. 10—106 **1 Claim**

1. In combination with a thread chasing annular die holder frame, a releasably mounted die head with a multiplicity of lubricating ports extending therefrom to match a receiving port of the die frame, said die head detachably mounted into the die frame whereby said ports upon matching will conduct lubricant unto the die teeth and the materials being threaded, a reservoir contained in said die holder frame with a removable lubricant filler cap and a lubricant outlet a spring-loaded push-button valve with a stem having a port and secured to said die holder frame such that upon engaging the button the port will align with the lubricant outlet thereby allowing lubricant to flow from the reservoir to the die head assembly, a normally closed spring loaded ball-check valve assembly with a puncture pin disposed in said die holder frame, and a pressurized gas cartridge chamber inserted into said chamber adjacent to and overlying said pin, whereby said cartridge will

rupture thus opening the ball valve and energizing the lubricant.

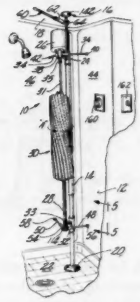
3,862,458
PRE-ASSEMBLED TERMINAL SCREW AND WASHERS AND METHOD OF MANUFACTURE
Peter P. Stanaitis, Rockford, Ill., assignor to Textron Inc., Providence, R.I.
Division of Ser. No. 294,258, Oct. 2, 1972, Pat. No. 3,816,820.
This application Mar. 15, 1974, Ser. No. 451,493
Int. Cl. B23p *19/08;* **B21h** *3/02*
U.S. Cl. 10—155 A **9 Claims**



1. A method of making a pre-assembled terminal element of the type including a threaded fastener having at least two captive, freely rotatable washers thereon, said method comprising the steps of: providing a screw member blank with a relatively upper head portion and a relatively lower shank portion; assembling on said shank a first washer having a pre-determined inner diameter; forming a ridge around said shank below the first washer to a diameter larger than the inner diameter of said first washer; assembling a second washer having a pre-determined inner diameter on the screw member blank below said first washer; forming a helical thread on said shank, said thread having a major diameter larger than the inner diameter of said second washer, said thread commencing at a location on said shank spaced from said ridge a distance greater than the thickness of said second washer, thereby providing a pre-assembled terminal element having two washers permanently assembled thereon, which element when oriented in a vertical position will have said first washer resting upon said ridge and said second washer engaged against said screw thread in spaced relation relative to said first washer, whereby an electrically conductive means may be readily affixed to said shank intermediate said first and second washers.

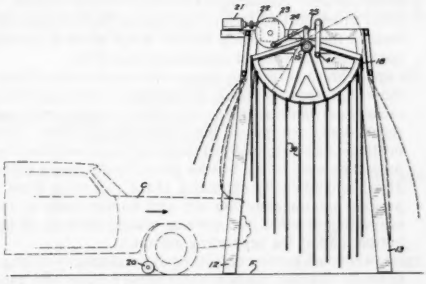
3,862,459
SCRUBBER AND MASSAGER APPARATUS
Fred F. Brunette, 22804 Brookdale, Farmington, Mich. 48024
Filed Oct. 29, 1973, Ser. No. 410,916
Int. Cl. A46b *13/02;* **A61h** *7/00*
U.S. Cl. 15—21 D **12 Claims**

1. A back scrubber and massager apparatus for installation in a bathing enclosure, comprising:
- a generally cylindrically shaped massaging or scrubbing means;
- an adjustable support beam having a top end adapted for abutment against the ceiling of the enclosure, and having a bottom end adapted for abutment against the floor of the enclosure;
- driving means for rotating said massaging or scrubbing means about its longitudinal axis;
- a fitting to removably connect said massaging or scrubbing means to said drive means;
- a support fixture to mount said drive means to said support beam for selective movement along said support beam; and
- another mounting fixture to mount said massaging or scrubbing means to said support beam for selective movement along said support beam;



said massaging or scrubbing means having its longitudinal axis generally parallel to said support beam.

3,862,460
CAR WASH APPARATUS
Elden J. Rockafellow, 1110 Longfellow Ave., Royal Oak, Mich. 48067
Filed Mar. 19, 1973, Ser. No. 342,474
Int. Cl. B60s *3/04*
U.S. Cl. 15—97 R **6 Claims**

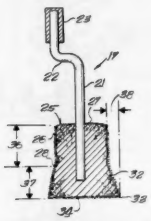


1. In a car wash wherein an automotive vehicle is moved in a predetermined path and subjected to successive washing operations, the combination comprising
- a frame,
- means for supporting the frame for oscillating movement about a transverse axis above the path of the vehicles,
- means for oscillating said frame about said transverse axis,
- a plurality of panels,
- each said panel comprising a plurality of transversely spaced vertically extending strips,
- said frame comprising transversely spaced arcuate segments,
- each said segment lying in a plane generally parallel to the path of the vehicles,
- and means for suspending said panels from said arcuate segments such that the panels extend transversely between said arcuate segments and are longitudinally spaced with respect to one another along the path of the vehicle.

3,862,461
BRUSH FOR CLEANING BOTTLE

Hans H. Bucklitzsch, R.R. No. 2, Bloomington, Ill. 61701

Filed Apr. 9, 1973, Ser. No. 348,907
Int. Cl. A46b 9/02
U.S. Cl. 15—164 1 Claim



1. A cleaning brush for cleaning bottles, such as baby bottles and the like, comprising, in combination:

a vertically extending cylindrical rod shaped supporting member having a top end and a bottom end;

a crank type arm associated with the top end of the supporting member extending parallel thereto and offset horizontally therefrom and having a top end and a bottom end, the bottom end being connected to the top end of the supporting member by a horizontally extending segment with rotation of the crank arm about the axis of the supporting member defining a circle concentric therewith;

a cylindrically shaped knob type handle open at its bottom end and closed at its top end, the open bottom end communicating with a cylindrical bore extending axially therethrough and of a cross-sectional configuration to rotatably receive therein the top end portion of the crank arm such that the handle is rotatable about the axis of the crank arm;

a brush member consisting of an upper brush portion, a lower brush portion formed contiguous thereto and continuous therewith, and a bottom brush portion formed contiguous thereto and continuous therewith;

the upper brush portion consisting of a multiplicity of longitudinally disposed resilient deformable bristles extending radially outwardly from the supporting member in planes substantially normal to the supporting member, each bristle being substantially of the same length with the free projecting ends of the bristles generally defining a cylindrical longitudinally extending shape extending from a position intermediate the top and bottom ends of the supporting member to a position spaced inwardly of the bottom end of the supporting member;

said lower brush portion consisting of a multiplicity of longitudinally disposed resilient deformable bristles with each bristle having one end attached to the supporting member and extending outwardly therefrom, the bristles becoming progressively longer from the top of the lower brush portion to the bottom of the lower brush portion with the free ends of the bristles defining a frusto-conical shape having the smallest diameter thereof positioned at the top thereof and equal to the diameter of the upper brush cylindrical portion shape and disposed contiguous thereto to form a continuous outer perimeter brush surface therewith, the lower brush portion disposed on the supporting member between the terminal point of the upper brush portion and disposed about the bottom end of the supporting member at the bottom end thereof;

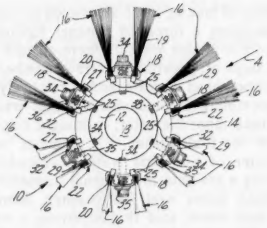
said bottom brush portion consisting of a multiplicity of resilient deformable bristles each having one end connected to the bottom end portion of the support member with the free ends of each bristle extending downwardly at an angle away from the support member to form the bottom brush portion which is disposed contiguous with the lower brush portion and formes a continuous outer perimeter brush surface therewith and defines a bottom brush surface therefor;

whereby upon inserting the cleaning brush longitudinally through the neck of a bottle to be cleaned with the bristles engaging the interior side wall surfaces, bottom surface, and bottom edge surfaces of the bottle, and with the supporting member and crank arm projecting axially outwardly of the neck of the bottle, and then applying a slight longitudinal pressure on the support member in a direction to effect the engagement of the bristles with the interior corners of the bottle to bring the lower brush portion bristles and bottom brush portion bristles into their intended operative positions, rotation of the brush and associated bristles relative to the bottle about the axis of the supporting member effected by use of the rotatable handle to effect the scrubbing and cleaning of the interior wall, bottom edge and corner surfaces by the cleaning brush.

3,862,462
QUICK CHANGE SEGMENTAL BRUSH

Robert C. Reiter, Aurora, Ill., assignor to Material Control, Inc., Aurora, Ill.

Filed Apr. 5, 1973, Ser. No. 348,118
Int. Cl. A46b 13/02
U.S. Cl. 15—182 12 Claims



1. A rotary brush structure comprising a plurality of similar elongated circumferentially spaced brush units each of mildly helical contour in a direction paralleling the axis of said structure as applied to the latter, and means for adjustably mounting said units to a rotary support of said structure to extend radially outwardly of the latter, said means including an assembly of axially spaced pairs of rigid internal seating and external wedging clip parts of U-shaped cross section in a plane at 90° to the rotative axis of the structure, the seating and clip parts being in radial register with one another, and being formed to receive a brush unit in wedged clamping engagement therebetween, pairs having means to adjustably mount the same to said rotary support to effect relative radial movement thereof in bringing them into and out of wedge-clamping engagement with the brush unit, said means including a spring coacting with said parts and biasing at least one thereof from the other in a radially separating direction.

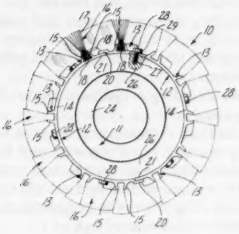
3,862,463
ROTARY BRUSH CONSTRUCTION

Robert C. Reiter, Aurora, Ill., assignor to Material Control, Inc., Aurora, Ill.

Filed Apr. 5, 1973, Ser. No. 348,119
Int. Cl. A46b 13/02
U.S. Cl. 15—182 8 Claims

1. A throw-away cylinder-type rotary brush construction comprising a rotary axial support, at least two like quasi-cylindrical mounting members releasably mounted coaxially about said support, each of said members having at one circumferential extremity thereof a radially offset edge portion which is of the same radial thickness as the remainder of said

member, and having at the opposite circumferential extremity thereof a non-offset edge portion also of the same radial thickness as the remainder of the member, said non-offset portion being circumferentially lapped, as mounted to the support, by the offset edge portion of an adjacent successive mounting member in a manner such that said mounting members are circumferentially flush across their lapped edge portions along the radially inner surfaces of the members, and are readily

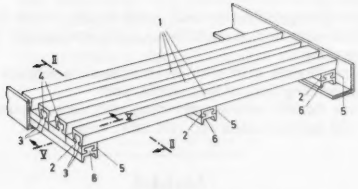


disengageable from the support and from one another in a radially outward movement, and means to secure the members to said support for individual such radial disengagement and release from the support, said members having means to receive and mount a circumferential series of axially extending brush elements, which elements release from said support unitarily with the respective mounting members and can be unitarily discarded therewith.

3,862,464
GRATING

Erich Arens, 4 Ewald-Rubsamen, 593 Huttental-Wiedenau, Germany

Continuation of Ser. No. 234,844, March 15, 1972, abandoned. This application Aug. 27, 1973, Ser. No. 391,884
Claims priority, application Germany, Mar. 16, 1971, 2112573
Int. Cl. E04c *2/42*; E04f *19/10*
U.S. Cl. 15—217 **5 Claims**

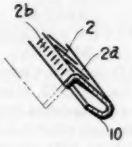


1. A grating comprising:
a. a plurality of elongated holding elements spaced from and parallel to one another,
i. each holding element being provided with an elongated stiffener, and
ii. each holding element being formed of separate a plurality of holding element portions in contact with one another,
1. some of the holding element portions having an undercut head piece on one side, the head piece being of constant cross-section for a substantial length, and
2. each portion having groove means for fixing the holding element portion to the stiffener on another side, and
b. a plurality of elongated bars of extruded shape, held parallel to one another and extending transversely of the holding elements,
i. each bar having a longitudinal undercut groove of cross-section corresponding to that of the head piece, which groove forms a locking non-rotational engagement with each of at least two of the undercut head pieces, and
ii. the holding elements forming the only connection between adjacent bars.

3,862,465
WINDSHIELD WIPER BLADE

Isao Ito, 8-119, Kamezakitakane-cho, Handa-shi, Aichi-ken, Japan

Filed Apr. 24, 1973, Ser. No. 354,113
Claims priority, application Japan, May 4, 1972, 47-52656
Int. Cl. B60s *1/38*
U.S. Cl. 15—250.42 **3 Claims**

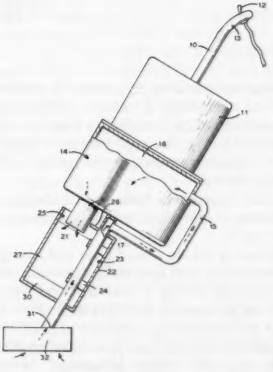


1. A windshield wiper comprising a blade assembly and connecting member attached to said blade assembly and having a short side and a long side in the transverse cross section to its longitudinal direction the long side of said member terminating at one end in a U-shaped bent portion bent in the same direction as the short side extends with the flat portions of said long side extending in parallel planes and the curved portion joining said flat portions substantially deflecting air impinging thereon so as not to impinge on said short side and not to lift said blade assembly.

3,862,466
CLEANING APPARATUS

Felix S. Jabsen, Lynchburg, Va. 24503

Filed May 4, 1973, Ser. No. 357,376
Int. Cl. A47l *7/00, 9/06*
U.S. Cl. 15—320 **2 Claims**



1. Apparatus for pumping matter from a surface comprising a motor, a centrifugal pump having a discharge outlet and driven by said motor for drawing air and liquid entrained

matter from the surface, a working head having a cavity formed therein in communication with said pump, said cavity establishing further communication with the surface, mop head support means interposed between said working head cavity and the surface, said support means having a screen to permit the flow of air and liquid entrained matter to said cavity, a mop head in engagement with said support means for mopping the surface, said mop means having passageways to enable the matter on the surface to pass into said cavity and to said communicating pump, an upper wand section connected to said motor, a lower wand section connecting said pump and said motor to said working head, a container detachably mounted on said lower wand section and in fluid communication with said pump to receive the discharge therefrom, said detachable container having at least one aperture formed therein to establish gaseous communication with the atmosphere and at least one rib formed in said container between said aperture and a free flow area in said container, said rib dividing the flow out of said pump discharge outlet into two portions.

3,862,467

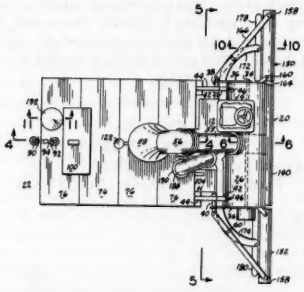
ROADWAY VACUUM SWEEPER WITH SLURRY DISPOSAL

Eli G. Krickovich, P.O. Box 106, Clinton, Iowa 52732

Division of Ser. No. 231,292, March 2, 1972, Pat. No. 3,766,586, which is a continuation-in-part of Ser. Nos. 70,335, Sept. 8, 1970, abandoned, which is a continuation-in-part of Ser. No. 118,228, Feb. 24, 1971, abandoned. This application Oct. 12, 1973, Ser. No. 402,630

Int. Cl. A47l 9/00; E01h 1/08

U.S. Cl. 15—340 **3 Claims**



1. A roadway cleaning apparatus in combination with a prime mover comprising a vehicle chassis having an engine control means thereon including a control cab and having a hydraulic fluid pump, the improvement comprising:

conveyor means transversely connected to the forward end of said chassis,

said conveyor means including a substantially cylindrical housing disposed horizontally adjacent the surface of the earth,

said housing having closed ends and having a coextensive downwardly and forwardly directed opening,

said housing having a rearward and upwardly directed discharge opening medially its ends,

a pair of cooperating coaxially aligned screw conveyors extending between and journalled by said housing ends, and impeller blades interposed between and connected, respectively, with adjacent ends of said screw conveyors medially the ends of said housing, the length of each said impeller blade being equal with the radius of said screw conveyors,

said screw conveyors being characterized by a helical edge portion, arcuately curved toward the direction of rotation, and generating a cylindrical surface coinciding with a circular plane generated by the outwardly directed limit of said thrower blades as the conveyors are rotated about their axis,

said curved helical edge portions and said impeller blades having a series of spaced-apart slots transversely formed therein adjacent their outer edge;

a plurality of rush segments each having a rectangular base portion and bristles secured thereto;

means extending through the slots and securing said brush segments, in base end to end abutting relation to the respective said screw conveyor and impeller blade outer edge portions;

drive means including a hydraulic motor for rotating said screw conveyors;

a rectangular fluid containing closed tank having a material receiving opening in its top wall and having inner and outer spaced-apart walls having heat and cold insulation therebetween mounted on said vehicle chassis rearwardly of and projecting above the horizontal plane defining the upper limit of said control cab;

a pair of shafts transversely journalled in coaxial aligned relation by the forward end portion of said chassis;

a pair of arms pivotally connected at one end portion, respectively, to the respective outwardly disposed end portion of the respective said shaft, the other end portion of said arms being pivotally connected, respectively, with opposing end portions of said housing;

a pair of braces projecting forwardly of said tank in laterally spaced relation above said housing;

a pair of pressure operated cylinders extending between and connected, respectively, with the forward end portion of said braces and opposing end portions of said housing for vertical pivoting movement of said housing about the horizontal axis of said shafts;

a discharge tube connected, at one end, with said housing around its discharge opening and extending rearwardly and upward, at its other end, and connected with said tank top wall around the receiving opening;

a heater mounted on said chassis;

piping connected with said heater and extending, intermediate its ends into said tank and being helically wound, adjacent the inner periphery of said tank;

a vacuum pump operatively mounted on said vehicle chassis;

a first elongated downwardly open suction nozzle coextensive with and rearwardly secured horizontally to said housing;

a first flexible skirt secured in depending relation to the depending limit of said nozzle; and,

a first flexible tubing connecting said vacuum pump with said suction nozzle and said tank, respectively.

3,862,468

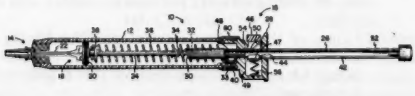
PORTABLE DESOLDERING TOOL

William S. Fortune, 14250 Dearborn St., Panorama City, Calif. 91402

Filed Aug. 17, 1973, Ser. No. 389,381

Int. Cl. A47l 5/04

U.S. Cl. 15—341 **6 Claims**



1. A portable desoldering tool of the character to be hand

cocked and triggered when desired to produce a vacuum stroke comprising:

a cylindrical pump body having forward and rear ends;

a forward tip assembly of the character to be frictionally fitted and retained within and selectively ejected from said forward end of said body;

a rear bushing housing member of the character to be retained by fitting with said rear end of said body and having an axial bushing opening therethrough;

a piston assembly including a forwardly extending tip bore cleaning rod, an air pump piston element, and a rearwardly extending alignment shaft, said rod and shaft being disposed substantially concentrically within said pump body, said alignment shaft having a rear, trigger engaging end portion: mainspring means within said pump body against which work is done in cocking said piston assembly and which upon triggering causes a rapid flyback of said piston element to create a vacuum stroke of air flow through said forward tip element;

a cocking tube retained by said axial bushing opening and being disposed over at least a portion of said alignment shaft, said cocking tube extending rearwardly from said pump body and being axially slidable with respect to said bushing opening and said alignment shaft,

said cocking tube having a forward, piston assembly engaging end portion for pushing said piston assembly forwardly; and

trigger means carried by said rear bushing housing for engaging said rear end of said alignment shaft and being of the character to release said alignment shaft for said rapid flyback selectively upon actuation of said trigger means, said cocking tube including access means comprising an elongate slot disposed along a major portion of the length of said tube for providing trigger engagement communication between said trigger means and said alignment shaft disposed therewithin,

said trigger means including a boss portion and trigger spring means for urging it through said elongate slot in holding engagement with said rear end of said alignment shaft disposed therewithin; and

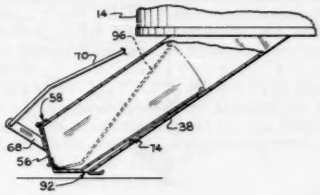
cocking tube return spring means connected to said cocking tube and said bushing housing member for urging said cocking tube rearwardly from said pump body; and cocking tube rear end termination means disposed to abut said boss portion of said trigger means to limit normally the forward displacement of said tube into said pump body, said boss portion being removable from said access slot to permit further forward, tip ejection displacement of said cocking tube when said trigger means is displaced against said trigger spring means.

3,862,469
VACUUM CLEANER

Jack L. Burgoon, Toledo, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Nov. 17, 1972, Ser. No. 307,421
Int. Cl. A47l *51/12*
U.S. Cl. 15—357 **13 Claims**

1. A vacuum cleaner comprising a nozzle having an inlet opening at one end, means for establishing flow of fluid through said inlet opening and into the nozzle, a flap movably mounted adjacent said inlet opening, means for moving said flap between one position in which a substantial portion of the inlet opening is closed off and another position in which the inlet opening is substantially unrestricted, and a vane having an end movably connected to said flap and another end spaced from said flap and positioned in said nozzle beyond said inlet opening, said another end of said vane being urged under the influence of gravity toward a position to block said nozzle and to reduce the transverse cross-sectional area of

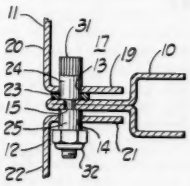


said nozzle thereby tending to increase the velocity of fluid flowing therethrough.

3,862,470
DOOR HINGE

David T. Swank, Millersburg, Ohio, assignor to The Flexible Company, Loudonville, Ohio

Filed Feb. 21, 1973, Ser. No. 334,269
Int. Cl. E05d *9/00*
U.S. Cl. 16—128 R **3 Claims**



1. A concealed hinge to provide simultaneous pivots from a frame having a frame aperture to a first and a second door wherein each door has a pivot surface having a pivot aperture, wherein the pivot surface is substantially perpendicular to the front surface of the door, comprising in combination:

means for spacing the first door from one side of the frame with the pivot surface and the pivot aperture of the first door adjacent to the frame aperture;

means for spacing the second door on the other side of the frame with the pivot surface and the pivot aperture of the second door adjacent to the frame aperture;

hinge means including a male and a female threaded fastener and a first and a second sleeve, each sleeve having an outside diameter for pivotable cooperation with the pivot apertures;

and means including said male and female threaded fasteners for fastening said hinge means to the frame with said sleeves extending from the frame through the pivot apertures to independently pivot the first and second doors and to substantially conceal said hinge means by the front surfaces of the doors in conjunction with the frame.

3,862,471
VISCERA SEPARATOR

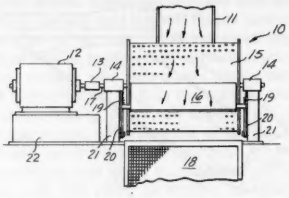
Roger C. Martin, Cocoa Beach, Fla., assignor to Edgar E. Griffis, Brevard County, Fla., a part interest

Filed Oct. 13, 1972, Ser. No. 297,310
Int. Cl. A22c *29/00*
U.S. Cl. 17—45 **7 Claims**

6. The method of processing shellfish viscera comprising the steps of;

a. separating said viscera from the shellfish;

b. depositing said separated viscera mixed with water on a perforated member;

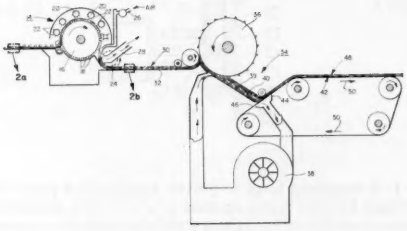


c. rotating the perforated member; and
d. scraping the viscera from the surface of the perforated member.

3,862,472
METHOD FOR FORMING A LOW BASIS WEIGHT NONOVEN FIBROUS WEB

Henry J. Norton, Wilmington, Del., and Brian E. Boehmer, Huron, Ohio, assignors to Scott Paper Company, Philadelphia, Pa.

Filed Jan. 5, 1973, Ser. No. 321,258
Int. Cl. D01g *13/00*
U.S. Cl. 19—145.5 **3 Claims**



1. A method for forming a low basis weight nonwoven fibrous web including a major proportion by weight of short cellulosic fibers of a papermaking length less than one-quarter inch and a minor proportion by weight of longer reinforcing fibers having an average fiber length of over one-quarter inch, said method comprising the steps of:

A. forming a loosely compacted batt of substantially individualized short cellulosic fibers of a papermaking length less than one-quarter inch;

B. forming a loosely compacted batt of reinforcing fibers having an average fiber length of over one-quarter inch;

C. separating and blending the fibers in the batts of short cellulosic fibers and longer reinforcing fibers to form a gaseous suspension of randomly arranged and intermingled fibers in which a major proportion of the fibers by weight are the short cellulosic fibers, and a minor proportion of the fibers by weight are the longer reinforcing fibers;

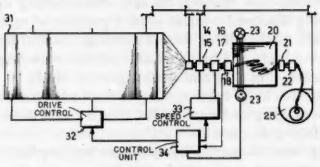
D. conveying the gaseous suspension of randomly arranged and intermingled short and longer fibers toward a foraminous support member through which the gaseous carrier medium passes, and upon which the fibers are deposited in a fibrous feed mat of randomly arranged and intermingled short and longer fibers, said feed mat comprising a major proportion by weight of the short cellulosic fibers and a minor proportion by weight of the longer reinforcing fibers, said feed mat having an average basis weight which is the greater of 12 oz./yd.^{2} and at least three times the average basis weight of the low basic weight nonwoven fibrous web to be formed; and

E. separating fibers from the feed mat and conveying them in a gaseous carrier medium to a second foraminous support member whereat the gaseous medium-passes through the foraminous support member and the fibers are deposited on said support member to form the low basis weight nonwoven fibrous web.

3,862,473
CONTROL OF THE FILLING LEVEL OF SLIVER RESERVOIRS IN THE TEXTILE INDUSTRY

Ernst Felix, and Peter Feller, both of Uster, Switzerland, assignors to Zellweger, Ltd., Uster, Switzerland

Filed Dec. 22, 1972, Ser. No. 317,771
Int. Cl. D01h *5/32*
U.S. Cl. 19—240 **5 Claims**



1. In a method for standardizing the cross section or weight per unit length of a sliver produced by a textile machine including the steps of measuring the supply of material at the outlet of the machine, drafting the material at the outlet of the machine, correcting long-term fluctuations in the material at the outlet of the machine by controlling the supply of material at the inlet of the machine in response to the measured supply of material, correcting short-term fluctuations in the material at the outlet of the machine in response to the measured supply of material by altering the draft thereof, and adjusting the difference between the variable rate of the short-term correction operation and the rate of travel of the sliver by supplying said sliver to a sliver reservoir, the improvement comprising the steps of monitoring a minimum filling level and a lower than minimum filling level of the sliver reservoir and, as a result of such monitoring, controlling the long-term fluctuations in response to the lower than minimum filling level and controlling said correction of short-term fluctuations in response to the minimum filling level in such a way that the average filling level of the sliver reservoir is controlled on the basis of the size of said fluctuations in this filling level.

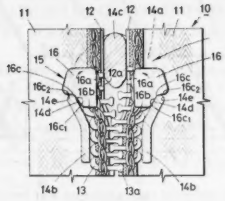
3,862,474
END STOP MEANS FOR SLIDING CLASP FASTENERS

Hiroyuki Ebata, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 17, 1973, Ser. No. 379,965
Claims priority, application Japan, July 18, 1972, 47-85303
Int. Cl. A44b *19/36*
U.S. Cl. 24—205.11 F **4 Claims**

1. In a sliding clasp fastener of the type which comprises a pair of oppositely disposed stringer tapes each carrying along their respective longitudinal edges a row of interlocking fastener elements made of a continuous plastic filament and a slider having side flanges including an inner guide wall and an upper flange end and mounted on the fastener for reciprocal movement along the said longitudinal edges, a top end stop means which comprises a pair of oppositely disposed slugs of a plastic material secured to the respective opposed stringer tapes adjacent to the beaded edges thereof, each of said slugs having a longitudinal linear edge extending inwardly of and substantially parallel to the beaded edge, a cam having cam surfaces on each of said slugs contiguous to said linear edge,

and disposed in abutting relation to said inner guide wall and said upper flange end of the slider, said pair of slugs embracing a group of fastener elements of which the element or elements of said group located at a point opposite to said cam have their



coupling heads intact and disengaged from the corresponding ones on the mating stringer tape, with the remaining elements in said group having ends registering with an extremity of the beaded edge of the tape.

3,862,475

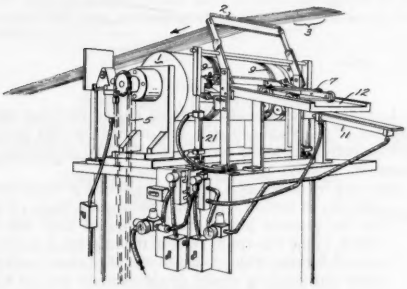
APPARATUS FOR APPLYING HOT MELT SIZE MATERIAL TO TEXTILE YARNS

Walter F. Illman, Greensboro; Robert C. Malpass, High Point, and Delano M. Conklin, Burlington, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Jan. 23, 1973, Ser. No. 326,149

Int. Cl. D06c *29/00*

U.S. Cl. 28—28 **5 Claims**



1. An apparatus for applying sizing material to a plurality of textile strands, the sizing material initially being solid form, comprising:

a roller having a plurality of grooves therein extending circumferentially about the peripheral closed surface thereof,

means for melting the sizing material and means for applying the sizing material to said roller so that sizing is lodged in said grooves thereof, and

means for rotating said roller so that sizing in said grooves is applied to textile strands each moving past said roller, and traveling for at least a short distance in a groove so as to pick up at least a portion of the sizing in that groove.

3,862,476

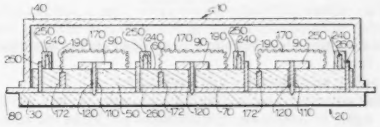
MULTIPLE CHARACTER DISPLAY DEVICE

Saul Kuchinsky, Milcrip Rd., R.D. 5, Somerville, N.J. 08876; Roger Ward Wolfe, 17378 Montero Rd., Rancho Bernardo, San Diego, Calif. 92128; Thomas Christopher Maloney, Claremont Ct. - Apt. D-3, Bernardsville, N.J. 07924, and William Michael Hennessey, 34 Fieldstone Dr., Somerville, N.J. 08876

Continuation of Ser. No. 325,294, Jan. 22, 1973, abandoned, which is a division of Ser. No. 188,485, Oct. 12, 1971, abandoned, which is a continuation of Ser. No. 870,678, Oct. 27, 1969, abandoned. This application Nov. 26, 1973, Ser. No. 419,180

Int. Cl. H01j *9/18, 9/36*

U.S. Cl. 29—25.16 **19 Claims**



1. A method of fabricating a gas discharge display panel having a plurality of side-by-side character positions, in each of which any one of a predetermined number of characters can be displayed, comprising the steps of

forming a plurality of elongated conductive runs along the inside surface of a base of insulating material in the direction intended for the line of character positions,

positioning a layer of insulating material on said conductive runs with a plurality of side-by-side groups of apertures therein, one such group at each character position,

positioning a plurality of groups of cathode segments on said insulating layer, with one such group at each character position, such that each cathode segment thereof covers one of the apertures of the aperture group located at the character position and is electrically connected through the aperture to the underlying conductive run,

arranging a unitary anode structure containing a plurality of side-by-side anode electrodes interconnected in a frame-like assembly by bridging members such that one such anode electrode lies adjacent each cathode segment group,

mounting said anode electrodes in place while they are still interconnected in said frame-like assembly, and

thereafter severing the bridging members between said anode electrodes to render the anode electrodes electrically isolated from one another.

3,862,477

POLING PROCESS FOR LINEAR PIEZOELECTRIC STRAIN TRANSDUCERS

Weston D. Ayers, W. Covina, and Joseph G. Hirsch, Diamond Bar, both of Calif., assignors to General Dynamics Corporation, Pomona, Calif.

Filed Aug. 16, 1973, Ser. No. 389,098

Int. Cl. B01j *17/00*

U.S. Cl. 29—25.35 **7 Claims**

1. A method of poling manufactured coaxial cable having a plastic dielectric material disposed intermediate the inner conductor and the outer shield conductor of the cable to produce a linear piezoelectric transducer comprising the steps of:

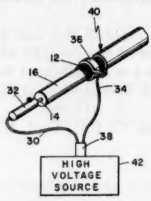
padding the barrel portion of a poling drum;

loosely winding a length of the manufactured coaxial cable around said padded barrel portion of said drum;

dressing the outer end of said cable to obtain a minimum of a 1 inch air gap between the inner conductor and the outer shield conductor of said cable;

placing said drum holding said cable in a temperature chamber;

connecting a source of high voltage to the dressed end of said cable between the inner conductor and the outer shield conductor of said cable;



heating said chamber and said cable to an elevated temperature;

cooling said chamber and said cable;

disconnecting said source of high voltage; and aging said cable to overcome its high initial piezoelectric sensitivity which decays exponentially.

3,862,478

TOOL FOR SWARF-PRODUCING MACHINING OPERATIONS

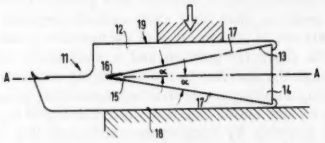
Alfred Kauderer, Friedhofstrasse 24, 7332 Eislingen/Fils, Germany

Filed Mar. 8, 1973, Ser. No. 339,452

Claims priority, application Germany, Mar. 10, 1972, 2211777

Int. Cl. B26d *1/00*

U.S. Cl. 29—95 R **7 Claims**



1. A tool for swarf-producing machining operations comprising:

a. a shank having a wedge shaped recess in a first end, each of the surfaces of said wedge shaped recess being disposed at an acute angle to the longitudinal axis of said shank;

b. a cutting surface at a second end of said shank; and

c. a wedge shaped member inserted into said wedge shaped recess in said shank and fastened to said shank.

3,862,479

METHOD FOR LOCATING AND SUPPORTING TENDONS IN REINFORCED CONCRETE STRUCTURES

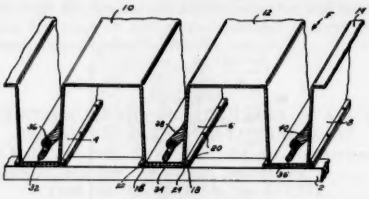
Maurice Laderoute, 118 Samoset Ave., Hull, Mass. 02045

Continuation-in-part of Ser. No. 295,441, Oct. 6, 1972,. This application Apr. 20, 1973, Ser. No. 352,926

Int. Cl. B23p *17/00*

U.S. Cl. 29—155 R **5 Claims**

1. In a method of forming a reinforced concrete structure of the joist and slab type wherein a concrete form presenting joist forming channels separated by flat bridging sections is secured to a horizontal shoring structure and reinforcing tendons are placed in the joist forming channels and raised into predetermined positions of vertical adjustment, the steps which include locating a tendon member in a joist forming channel of a concrete form between two adjacent bridging sections of the concrete form and below upper surfaces of the adjacent bridging sections, engaging an underside of said tendon in the joist forming channel with a tendon holder member, suspending the tendon holder and engaged tendon section in suspension bar means supported at spaced apart



points at upper sides of two adjacent flat bridging sections of the concrete form and then lifting the engaged tendon sections and tendon holder while suspended into a position of predetermined vertical spacing with respect to the bottom of the joist forming channel.

3,862,480

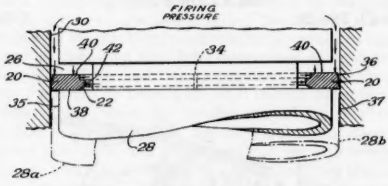
RING MANUFACTURE, PRODUCTIVE OF FACE CONTACT SEAL

Norman M. Packard, Des Plaines, and John W. Gaines, Wheaton, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 195,955, Nov. 5, 1971, abandoned. This application July 26, 1973, Ser. No. 382,787

Int. Cl. B23p *15/00*, *15/08*

U.S. Cl. 29—156.4 R **4 Claims**



1. A process of manufacturing an engine provided with a number of cylinders and with that number of ring grooved pistons individual to the respective cylinders, comprising the steps of:

selecting by means of a selection-rejection process from a plurality of torsion type split compression rings, of rings for the grooved pistons each having at least one side which, in the free spring state of the ring, has a consistent overall flatness, which in the torsionally twisted collapsed state with the ring closed or substantially so, has frusto conicity with the inner periphery of the side protruding and being substantially coplanar at all points on the periphery, and which when the side is compressed into flattened state while so collapsed operatively presents a substantially uninterruped pressure ring of face contact; the one side during said face contact characterized by all points aforesaid thereof being planar to one another to at least about ten light bands of flatness;

sealing said piston, with such plurality of compression rings including such rings as so selected, by installation of a ring each in an associated compression ring groove on each piston with an associated side of the groove confronting said one side of the ring; and

constructing said engines by assembling such pistons in the respective cylinders with each ring engaging a cylinder wall at all times to retain the ring in collapsed state on the piston, and with the ring effective during engine operation to establish a substantially continuous pressure ring

of at least line contact at the interface of said one ring side and the confronting groove side associated therewith to seal the piston.

3,862,481

METHOD OF MANUFACTURING TUBES PROVIDED WITH LONGITUDINAL GROOVES IN INNER WALL AND/OR OUTER WALL, AND TUBES MANUFACTURED BY THIS METHOD

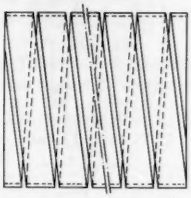
Johannes Van Geenen, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 26, 1973, Ser. No. 401,122

Claims priority, application Netherlands, Oct. 14, 1972, 7213941

Int. Cl. B21d *53/02*; B23p *15/26*

U.S. Cl. 29—157.3 R **5 Claims**



1. In a method of manufacturing tubes, particularly suitable for heat pipes and heat exchangers, each having a plurality of longitudinally extending grooves in the inner wall and/or outer wall, wherein a flat band having parallel grooves is bent about an axis parallel to the grooves so as to form a tube, the oppositely situated longitudinal sides being joined together, the improvement comprising forming the flat band having parallel grooves by providing in the outer wall and/or inner wall of a tubular element having a circular cross-section a number of helical grooves of the same pitch and extending in the same direction, subsequently cutting open the tubular element in order to form a helix of the same direction and pitch as the grooves, and then unwinding the helically wound band thus obtained.

3,862,482

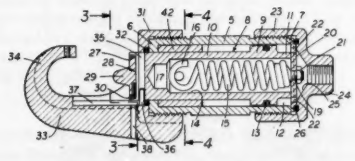
PORTABLE CRIMPING TOOL

Cyril Robert Green, Honesdale, Pa., assignor to Mario D. Medio and Grace E. Medio, both of Malverne, N.Y., part interest to each

Filed Jan. 29, 1974, Ser. No. 437,745

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 DT **17 Claims**



1. In a tool for operating upon sleeve connected joints or the like; an open ended tubular cylinder having an inwardly directed annular flange at its front end and an annular disc receiving shoulder at its rear end, the circular aperture defined by said annular flange having a diameter less than the inside diameter of said cylinder; a circularly cross-sectioned piston reciprocably mounted in said cylinder and having a relatively long front portion of reduced diameter for sliding engagement with the wall of said flange defined circular aperture, a portion of larger diameter for sliding engagement with the associated wall of said cylinder for the reception of actuating fluid, said piston being provided with a rearwardly open axial well; a disc freely seated on said annular disc receiving shoulder and provided with at least one orifice extending into communication with the rear portion of said cylinder; means for retaining said disc in its seated position on said annular shoulder and for admitting actuating fluid to the said at least one orifice thereof; a transversely disposed retainer pin removably mounted in said piston adjacent the bottom of said well; a tension spring located in said well intermediate the bottom thereof and said disc, the forward end of said spring being releasably engaged with said removable retainer pin, the rear end of said spring being adjustably and releasably secured to said disc for movement in an axial direction whereby to permit changes in the tension of said spring to be effected and to permit removal of said disc during disassembly; a work piece operating element removably affixed to the front end of said piston; and a rigid work piece supporting saddle carried by said cylinder and disposed in spaced cooperative relation with respect to said work piece operating element.

3,862,483

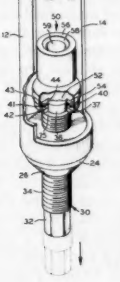
SPECIAL ARBOR PRESS TOOL

Kenneth D. Kloster, 5153 Rambo Ln., Toledo, Ohio 43623

Filed Oct. 10, 1972, Ser. No. 296,303

Int. Cl. B26p *19/02*

U.S. Cl. 29—257 **7 Claims**



1. A portable tool for insertion and removing press fit parts in an aperture of an arm, comprising:

A. an arbor press comprising:

1. an open sided tubular housing having an annular arm engaging mandrel at one end thereof and a tapped hole in its other end,
2. a drive screw threaded in said tapped hole having a lever engageable outer end and a shank at its other end,
3. a thrust bearing at its inner end having two parallel annular relatively rotatable members, one of which members has its inner cylindrical surface fixedly attached with an interference fit to the exterior surface of said shank end; and

B. a cylindrical mandrel having a cylindrical boss at one end thereof seatable in the central aperture of said other annular member of said thrust bearing in said press, said mandrel having a seat portion at its other end for engaging said part.

7. A portable tool for inserting and removing ball and socket joint assemblies from the front suspension arms of a vehicle without the removal of said arms from the vehicle, comprising:

A. an arbor press comprising:
1. a tubular barrel having a central half open side, a suspension arm engaging annular mandrel in one end thereof, and an internally threaded head in the other end thereof,
2. a drive screw threaded through said head having a wrench engaging bolt type outer end and an inwardly disposed support end, and
3. a centrally apertured thrust bearing partly surrounding said support end and fixed thereto; and

B. three different cylindrical mandrels, each having a boss portion at one end for removably seating in the aperture of the other side of said thrust bearing, and each mandrel having a rim portion at its other end for engaging the ball and socket joint assemblies, one mandrel being adapted for engaging and removing said assemblies from said suspension arms and the other two mandrels being for engaging and insertion of said assemblies in the upper and lower suspension arms, respectively.

3,862,484

PRODUCTION OF COMPOSITE MATERIAL

Joseph A. Chivinsky, Sarver, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 177, Jan. 2, 1970, Pat. No. 3,693,242. This application Aug. 30, 1972, Ser. No. 284,854
Int. Cl. B23k *31/02*
U.S. Cl. 29—472.3 **12 Claims**

1. A method for producing a formed composite, which comprises the steps of: providing at least one layer of plain carbon steel having up to 1.5 percent of carbide former, said carbide former being present in a carbide former-to-carbon ratio of from 5 to 25; providing at least one layer of stainless steel; providing at least one layer of a nonferrous third metal having a free energy of oxide formation less negative than the free energy of oxide formation for said plain carbon steel; superimposing said layers of plain carbon steel, stainless steel and third metal with at least one layer of said third metal between a layer of said plain carbon steel and a layer of said stainless steel; heating said layers of plain carbon steel, stainless steel and third metal at a temperature of from 1,200° to 2,400°F, said free energy of oxide formations being those for the particular temperature at which said layers are heated; hot rolling said layers of plain carbon steel, stainless steel and third metal so as to form a bond therebetween and thereby produce a composite; cold rolling said composite; annealing said cold rolled composite at a temperature in excess of 1,800°F, said annealed composite having a 0.2 percent yield strength of less than 50,000 pounds per square inch, and forming said composite.

3,862,485

ADJUSTABLE DIE AND PUNCH FOR SHEET MATERIAL FASTENING MACHINES

Otto P. Hafner, 1321 Puddock Way, Cherry Hill, N.J. 08034

Continuation-in-part of Ser. No. 275,946, July 28, 1972, abandoned. This application Aug. 1, 1973, Ser. No. 384,494
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 B **12 Claims**

1. Punch and die apparatus for fastening overlying planar sheets of metal or other deformable material, said apparatus comprising:

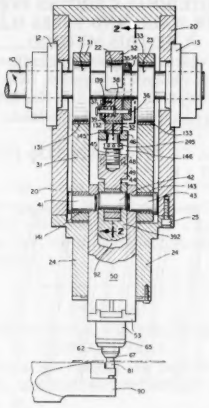
a. a press having longitudinally movable first and second rams supported on a rigid base;

b. a longitudinally extending pierce-and-forming punch rigidly mounted on said base, said punch having a free end face;

c. a cutting-and-forming die rigidly mounted on said first ram for movement therewith, said die having a longitudinally extending punch-receiving aperture into which said pierce-and-forming punch is receivable when said first ram is extended;

d. a flattening punch rigidly mounted on said second ram for movement therewith, said flattening punch being longitudinally slidably received in said punch-receiving aperture;

e. said flattening punch having an end face cooperable with said end face of said pierce-and-forming punch when said second ram is extended;



f. means for adjusting the spacing between the end faces of said flattening punch and pierce-and-forming punch when said second ram is extended; and

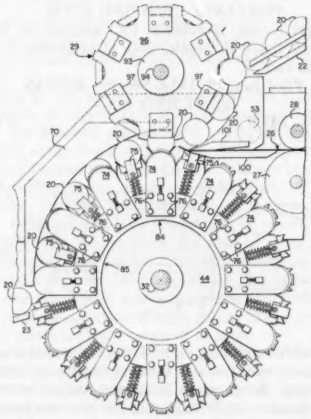
g. means for adjusting the phase relation between the times of extensions of said first and second rams.

3,862,486

METHOD AND MACHINE FOR APPLYING POUR SPOUTS TO CONTAINERS

Edward John McArdle, Morton Grove, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Mar. 25, 1974, Ser. No. 454,181
Int. Cl. B23p *19/04, 17/00, 11/02*
U.S. Cl. 29—208 B **14 Claims**



1. In a machine for applying an article to a container in which the article is formed from a resilient deformable plastic sheet material and comprises a body portion and an integral coplanar band at one end thereof, a member having a pocket

at one end thereof, means for delivering an article into said pocket with one side of said body portion thereof in engagement with said pocket, means for delivering a container to said pocket onto the other side of said body portion and immediately adjacent to said integral band of said article, a band engaging assembly mounted adjacent said member and engaging said integral band of said article on the same side of said article as said one side of said body portion of said article, means for moving said container, said body portion of said article and said member together as a unit relative to said band engaging assembly and said band in opposite directions to a position at which said container is substantially concentrically within said band, and said band engaging assembly being formed to permit said band to move from said assembly in a direction substantially perpendicular to said opposite directions and over said container by forces in said direction produced by a stretched condition of said body portion and said band of said article in said position.

3,862,487

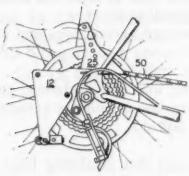
CHAIN POSITIONER FOR 10-SPEED BICYCLE

Kenneth Warren Van Gundy, 25 Arroyo Ct., San Mateo, Calif. 94402

Filed Apr. 30, 1973, Ser. No. 356,023

Int. Cl. B25b *27/22*

U.S. Cl. 29—270 **11 Claims**



1. A tool for facilitating removal and installation of a sprocketed wheel having at least one toothed gear driven by a chain and a chain tensioner assembly, said gear being removably carried by a frame, said tool comprising:

an anchor plate adapted to be secured to said frame for providing substantially rigid support relative thereto;

means for supporting said chain in a stable, retracted position while said gear is removed from the frame, said means comprising a chain retractor including an edge portion having at least one projection engageable with at least one of the intertices of said chain; and

means for securing said chain retractor to said anchor plate in said retracted position, whereby said chain is maintained in a stable configuration during the removal of said wheel from the frame and the reinstallation of said wheel in said frame.

3,862,488

METHOD OF MAKING A JOINED METAL STRUCTURE

Leopold Pessell, Wyndmoor, Pa., and Arthur Noel Gardiner, Somerville, N.J., assignors to RCA Corporation, New York, N.Y.

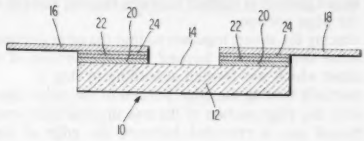
Division of Ser. No. 91,363, Nov. 20, 1970, abandoned. This application May 29, 1973, Ser. No. 364,661

Int. Cl. B23k *31/02*

U.S. Cl. 29—492 **4 Claims**

1. A method of bonding metallic bodies to molybdenum-containing bodies comprising the steps of,

coating said molybdenum-containing bodies with palladium by immersing said molybdenum-containing bodies in a dilute electroless palladium plating solution, containing a predetermined amount of palladium, for a time sufficient to plate out substantially all of said palladium onto said bodies, and



brazing said metallic bodies to the palladium coated molybdenum-containing bodies with a brazed material of silver, copper, or alloys of silver and/or copper.

3,862,489

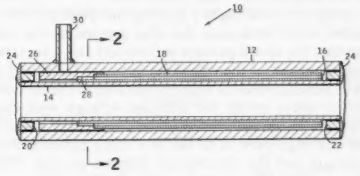
METHOD OF MANUFACTURING BORON-ALUMINUM COMPOSITE TUBES WITH INTEGRAL END FITTINGS

Martin Donald Weisinger, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 240,711, April 3, 1972, Pat. No. 3,788,926. This application Nov. 29, 1973, Ser. No. 420,028

Int. Cl. B21c *37/083;* **B32b** *1/08, 31/20*

U.S. Cl. 29—476.5 **7 Claims**



1. A method of fabricating a composite structure which comprises the steps of:

providing at least one composite sheet comprising boron fibers in an aluminum matrix;

forming a coil of said sheet around a first shaping tube in a manner providing a stepped, telescoping appearance to at least a first end of said coil;

placing a fitting over said first tube into contact with said first end of said coil, said fitting being shaped to conform to said stepped, telescoping, configuration; said fitting comprising an alloy selected from the group consisting of titanium and aluminum alloys;

inserting the assembled first forming tube into a second shaping tube;

sealing the assembly of tubes and substantially evacuating gases from therebetween;

subjecting said assembly to a diffusion bonding temperature at an isostatic pressure sufficient to consolidate said coil for a period sufficient to diffusion bond said coil together and to said fitting; and

removing said shaping tubes.

3,862,490

METHOD OF JOINING THE EDGE PORTIONS OF TWO SHEETS

Norihiro Tsuneishi; Yoshiyuki Miyabayashi; Hiroyuki Aida, and Hideo Takizawa, all of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 29, 1974, Ser. No. 437,716

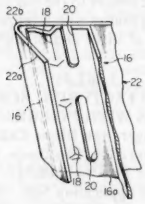
Claims priority, application Japan, Jan. 31, 1973, 48-13527[U]

Int. Cl. B21d *39/00;* **B23p** *11/00*

U.S. Cl. 29—505 **2 Claims**

1. A method of joining two sheets at their edges, comprising the steps of:

a. forming an elongated slot through an edge portion of one sheet and an elongated raised portion on the same edge portion so that the slot and the raised portion are substantially parallel to the edge of the edge portion and the raised portion is formed between the slot and the edge of the edge portion;
b. placing the sheets together so that the edge portion of the other sheet extends beyond the edge portion of the one sheet which was formed according to step *a*;
c. partially folding the edge portion of the other sheet back over the edge portion of the one sheet so that a predetermined gap is provided between the edge of the edge



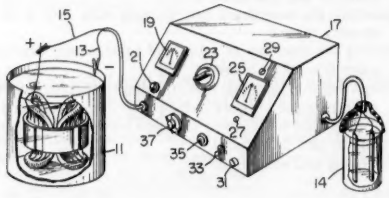
portion of the one sheet and the inner surface of the folded end of the other sheet; and
d. completely and tightly folding the edge portion of the other sheet back over the edge portion of the one sheet so that the raised portion is flattened and a section of the edge portion of the one sheet between the raised portion and the edge thereof deforms parallel to the surface of the other sheet to fill the gap and engage with the inner surface of the folded end of the other sheet, and a section of the edge portion of the one sheet between the raised portion and the slot thereof deforms parallel to the surface of the other sheet to partially fill the slot.

3,862,491

METHOD FOR EVALUATING MANUFACTURING OPERATIONAL EFFECTS ON INSULATED WINDINGS

Hugh H. Richardson, New Haven, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 140,914, May 6, 1971, Pat. No. 3,742,349. This application Mar. 12, 1973, Ser. No. 339,641
Int. Cl. G01r *31/02*
U.S. Cl. 29—593 **6 Claims**



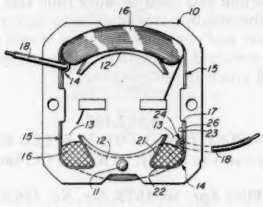
1. A method for evaluating the effect of a preselected manufacturing operation on a structure including an insulated winding, the method comprising: submerging the winding in a conductive fluid; applying a potential across the winding and fluid; determining a first capacitive component of leakage current from the winding; removing the winding from the fluid; performing a preselected manufacturing operation on the winding; again submerging the winding in a conductive fluid; again applying a potential across the winding and fluid; determining a second capacitive component of leakage current from the winding; and comparing the first and second capacitive components of leakage current.

3,862,492

METHOD FOR PRODUCTION OF STATOR LEAD ANCHORING AND SPLICE-INSULATING SLOT INSULATOR STRUCTURE

William A. Crabb, Kent, Ohio, assignor to Ametek, Inc., New York, N.Y.

Division of Ser. No. 207,454, Dec. 13, 1971, Pat. No. 3,748,511. This application July 20, 1973, Ser. No. 381,075
Int. Cl. H02k *15/02*
U.S. Cl. 29—596 **5 Claims**



1. A method of fabricating an electromagnetic structure having an iron core with at least one mouth slot with inner, outer and joining wall surfaces,
a coil of wire wound on said core and into said slot,
a lead element having a splicing end spliced to one end of the coil wire, and
a slot insulating liner of insulating, generally sheet-like, material interposed in said slot between the coil wire and the walls of said slot,
the steps of
preforming a said slot insulating liner to have an inner panel, an outer panel and a portion joining said panels for general conformity respectively to said inner outer and a joining wall surfaces of the slot, and to have a channel structure
extending longitudinally of the liner, and adapted to form a channel insulatingly receiving a portion of the length of a said lead element at the splicing end to be retained therein;
providing a said core having a said slot therein; emplacing a preformed said slot insulating liner in the said slot;
inserting a said lead element in said channel structure with its splicing end projecting endwise from the channel; winding wire into the slot to provide a core winding with a wire end adjacent said splicing end; and splicing said ends.

3,862,493

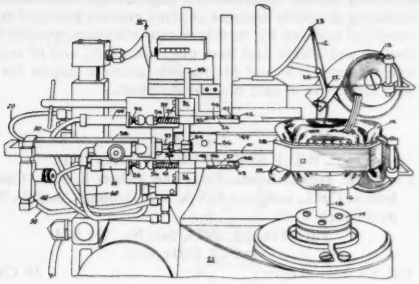
APPARATUS AND METHOD FOR TYING COILS

Richard J. Habegger, Grabill, and Stanley L. Wargel, Fort Wayne, both of Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Aug. 7, 1973, Ser. No. 386,372
Int. Cl. D05b *3/00*
U.S. Cl. 112—121.2 **11 Claims**

1. Apparatus for tying cord about at least one end turn portion of at least one coil projecting beyond at least one side surface of a magnetic core carrying side turn portions of the at least one coil, the apparatus comprising: at least one tying member for tying cord about the at least one coil and for developing a final cord segment; means for periodically effecting relative movement between a core and the at least one tying member; means for pulling at least a portion of a final cord segment from the at least one tying member, said means for pulling including a cord puller having a cord receiving

region; and actuating means for causing the cord puller to advance the cord receiving region thereof to a predetermined region relative to the core before the at least one tying member fully develops the final cord segment.



3,862,494

HAND TOOL FOR CLEAN CUTTING OF FIT-UP WALLPAPERS, FITTED CARPETS AND THE LIKE

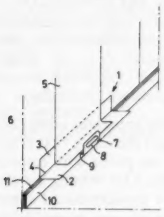
Einar Albin Valdemar Andersson, Arildsgatan 7, S 214 39 Malmo, Sweden

Filed Oct. 16, 1973, Ser. No. 406,976

Claims priority, application Sweden, Oct. 17, 1972, 13351/72

Int. Cl. B26b *29/02*

U.S. Cl. 30—289 **1 Claim**



1. A device for use in trimming a surface covering sheet material, said device having right angularly related flat walls meeting at a corner, one of said walls being adapted to be placed under an edge of said sheet material with the other wall projecting outwardly from said surface with said corner serving as a guide for a cutting tool, said other wall having a laterally extending flange at its free edge and said flange and said other wall each having a slot therethrough with said slots arranged to receive the fingers of a user's hand and serve as a handle for gripping and manipulating said device.

3,862,495

WALLPAPER CUTTING GUIDE

William O. Markert, 2 Robyn Ave., RFD No. 3, Manchester, Mass. 03103

Filed July 26, 1973, Ser. No. 379,461

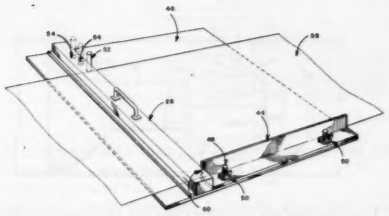
Int. Cl. B26b *29/02*

U.S. Cl. 30—294 **1 Claim**

1. A guide for cutting sheets of wallpaper and like materials from rolls and the like comprising in combination:

a. a cutting board;

b. a pair of spaced apart material guide members attached to said board, one of said members comprising a longitudinal bar, up against which said unrolled material is butted, and the second of said members comprising a peg which may be varied in position by inserting it in any one of a plurality of holes located in said cutting board, the forward edges of said guide members in alignment perpendicular to the longitudinal edge of said bar; and



c. a removable cutting tool guide bar adapted to be pressed over said unrolled material and against said cutting board, said bar having two parallel longitudinal edges of a length greater than the space between said material guide members, the first longitudinal edge of said cutting tool guide bar for positioning against said guide member forward edges, the second for guiding a cutting tool over said unrolled material against said cutting board.

3,862,496

METHOD FOR MEASURING THICKNESS OF PIECES OF TIMBER

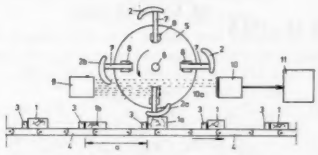
Alpo Rysti, Frisans; Lasse Harma, Lahti, and Kurt Sjodahl, Helsinki, all of Finland, assignors to Sateko Oy, Helsinki, Finland

Filed Aug. 9, 1973, Ser. No. 386,932

Claims priority, application Finland, Aug. 22, 1972, 2325/72

Int. Cl. G01b *5/02*; **B07b** *13/02*

U.S. Cl. 33—124 **1 Claim**

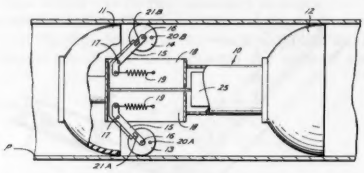


1. Method for measuring the thickness of pieces of timber by the use of measuring heads, comprising the steps of moving pieces of timber to be measured in a plane with their longitudinal direction traverse to the direction in which they are moved, said pieces of timber following each other at equal distances in said direction of movement, moving a plurality of measuring heads disposed above said plane along a closed path at a speed synchronous with the speed of the pieces of timber, whereby one measuring head assumes a position wherein it rests against the upper surface of one piece of timber and the measuring head which is next on said closed path assumes a position resting against the upper surface of the next piece of timber, displacing the measuring heads in contact with the pieces of timber in a direction transverse to their movement along said closed path, pushed by the pieces of timber into a position defined by the thickness of the respective pieces of timber, and converting said position of the measuring head into a signal containing the thickness information referring to the piece of timber in question.

3,862,497
PIPELINE PIG

Burton Vernooy, and Robert L. Kendall, both of Tulsa, Okla., assignors to T. D. Williamson, Inc., Tulsa, Okla.

Filed July 25, 1973, Ser. No. 382,306
Int. Cl. G01b 3/12, 7/04
U.S. Cl. 33—141 G 10 Claims

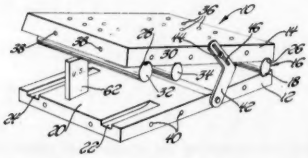


1. A pipeline pig for indicating the distance from one point to another point or points in a pipeline comprising, in combination: a pig having a central body and means carried by the body for impeding flow of pipeline fluid past the pig so that the pig is propelled by such fluid along the pipeline; a plurality of wheels; means for mounting each of said wheels on said body; a plurality of pulse generating means each including a magnetic flux means carried by each of said wheels for rotative movement past a portion of one of said mounting means and pig body and means situated at each of such portions to produce a discrete pulse only when the respective one of said flux means moves therepast to provide a plurality of pulse trains each having a pulse repetition rate related to the rate of revolution of the wheel associated therewith; and comparison means for comparing the pulse repetition rates of the respective pulse trains and providing an output signal normally responsive to the pulse train having the highest pulse repetition rate over an increment of travel of the pig, said output signal having a property related to the pulse repetition rate of such pulse train.

3,862,498
COMBINATION SINE PLATE

Arthur P. Klucznik, 28055 Adler Dr., Warren, Mich. 48093

Filed June 7, 1973, Ser. No. 367,845
Int. Cl. G01b 3/30
U.S. Cl. 33—174 S 3 Claims

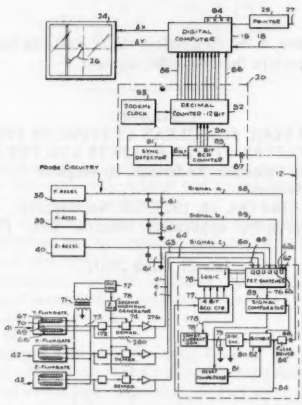


1. A sine plate for obtaining precise angular measurements in degrees and minutes with the use of standard U.S. and Metric measurement gage blocks, and comprising; squared and parallel base and work-surface plate members pivotally hinged together near their back side edges for angular placement of said work-surface plate member relative to said base plate member, a hinge pin roll pivotally connecting together said base and work-surface plate members, and a pair of sine bar roll members of identically like cross-sectional size to each other and said hinge pin roll provided on the underside of said work-surface plate member in parallel squared relation to each other and apart from said hinge pin roll, a gage block receptive surface provided on said base plate member and receptive of said sine bar roll members each together in touching engagement therewith in the parallel orientation of said work-surface plate member relatively over said base plate member, said sine bar roll members being respectively disposed a precisely known U.S. standard and Metric standard distance apart from said hinge pin roll for respective use of U.S. and Metric measurement gage blocks therewith, and including distinctly separate channel grooves provided transversely of said sine bar members, near relatively opposite ends thereof and within said base plate members, and of respectively known U.S. and Metric measurement depths for use with respective of said sine bar members.

3,862,499
WELL SURVEYING APPARATUS

Carroll E. Isham, Buena Park, and Robert E. Elas, Carson, both of Calif., assignors to Scientific Drilling Controls, Newport Beach, Calif.

Filed Feb. 12, 1973, Ser. No. 331,574
Int. Cl. G01c 9/16
U.S. Cl. 33—312 20 Claims



1. Well surveying apparatus comprising a probe to be lowered into a well and including first sensing means for sensing the angularity of the probe with respect to the vertical, and second sensing means for sensing the orientation of the probe with respect to a predetermined direction other than the vertical, said first sensing means including three mutually perpendicular gravity actuated sensors for sensing three different conponents respectively of the probe inclination; means for measuring movement of said probe between different stations longitudinally of the well; and computer means connected to receive signals from said first and second sensing means representing the orientation of the probe in the well, and to receive additional signals from said measuring means representing distances between different stations longitudinally of the well, and programmed to compute from said signals at least one horizontal or vertical coordinate between two different stations in the well.

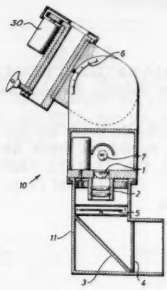
3,862,500
PLUMB- OR INCLINATION-SETTING DEVICE

Gustaf Hakan Oskar Wibom, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Apr. 17, 1973, Ser. No. 351,861
Claims priority, application Sweden, Apr. 20, 1972, 5208/72; Mar. 8, 1973, 7301784
Int. Cl. G01c 9/28, 9/32
U.S. Cl. 33—333 13 Claims

1. A plumb or inclination-setting device for an apparatus comprising a member which is tiltable in a vertical plane such as a drilling machine, crane, platform or the like, the inclination of said tiltable member in relation to the horizontal plane

being regulated from an operating position located at a distance from said tiltable member, characterized by a housing, means for mounting said housing upon said tiltable member so that said housing is rotatable about a first axis perpendicular

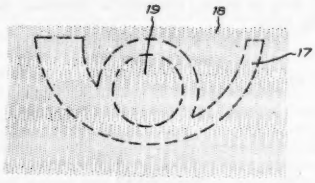


to said vertical plane, a level carried by said housing, means for illuminating said level, and means for projecting a magnified image of said level so that said magnified image of said level may be viewed with the naked eye from the operating position.

3,862,501
DOCUMENTS VERIFIABLE AS TO THEIR AUTHENTICITY

Anton Wilhelm Jemseby, Allfarvagen 29, 183 42 Taby, and Erik Gustav Elinder, Djurgardsvagen 136, 115 21 Stockholm, both of Sweden

Filed June 11, 1973, Ser. No. 368,528
Claims priority, application Sweden, June 16, 1972, 7948/72; Aug. 17, 1972, 10674/72
Int. Cl. G09c *5/00*
U.S. Cl. 35—2 **3 Claims**

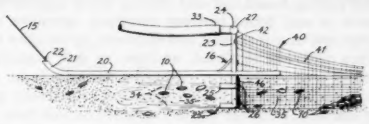


1. A document verifiable as to its authenticity, comprising a first surface area and a second surface area, adjoining said first surface area, a first pattern of separate spaced apart image elements within said first surface area, and a second pattern of separate spaced apart image elements within said second surface area, said first and second patterns being similar and having the form of a moire pattern, the image elements of which correspond to moire elements formed by photographic printing of a plurality of superimposed and collectively printed screens which have transparent screen apertures on a non-transparent background and at least one of which has regularly arranged elongated screen apertures, and said first pattern being displaced in relation to said second pattern.

3,862,502
CLAM HARVESTER

Ben Young, P.O. Box 1016, Cordova, Alaska 99574

Filed Oct. 19, 1973, Ser. No. 407,826
Int. Cl. E02f *5/00*
U.S. Cl. 37—55 **5 Claims**



1. A clam harvesting apparatus adapted to be moved along the ocean floor, comprising:

a supporting framework;

at least one runner extending forwardly along said framework with respect to a forward path of travel for slidably supporting the apparatus on the surface of the ocean floor;

a plurality of jet nozzles mounted to said framework at laterally and elevationally spaced locations below and parallel with said runner to engage the soil below the surface of the ocean floor;

said jet nozzles having discharge openings facing forward and spaced apart laterally with respect to said forward path for directing jets of fluid forward into the ocean floor soil below said runner parallel to the surface of the ocean floor;

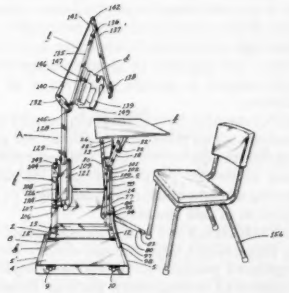
supply means for supplying a fluid under sufficient pressure to affect a liquid suspension of the bottom material and clams therein immediately forward of and between the jet nozzles as the apparatus is moved in a swath on the ocean floor; and

clam receiving means located directly behind the jet nozzles and extending below the ocean floor surface and operatively mounted to said framework for movement therewith through said liquid suspension to collect clams held therein while allowing the suspended soil to be sifted therethrough.

3,862,503
IRONING APPARATUS

Edwin E. Foster; Wilbur A. Foster, and Thomas E. Foster, all of Austin, Tex., assignors to Majik-Ironers, Inc., Austin, Tex.

Filed May 30, 1974, Ser. No. 474,842
Int. Cl. D06f *71/00*
U.S. Cl. 38—30 **18 Claims**



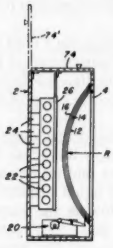
1. An ironing apparatus for disposition upon a support surface comprising means defining a carrying case having a base wall and a pair of complementary closure sections; each of said sections incorporating a side panel portion hingedly engaged to said base wall along opposed margins for swingable

movement of said sections toward each other into case-closed or carrying position and away from each other into case-opened condition wherein said side panel portions are in coplanar alignment with said base wall upon the support surface, a multi-sectional foldable ironing board, an ironing board support fixed on said base wall, means interengaging said ironing board and said ironing board support for movement of said board between extended, operative condition when said case is opened, and collapsed, inoperative condition when said case is closed, an iron, an iron support linkage having a normally upper end and a normally lower end, said iron support linkage being engaged at its normally upper end to said iron, a linkage support mounted on said base, said iron support linkage being pivotally engaged at its normally lower end upon said linkage support, a motor fixed in said linkage support, and means interengaging said motor and said iron support linkage for effecting movement of said iron support linkage with said motor stationary.

3,862,504
VISUAL DISPLAY APPARATUS

Harry M. Ringelheim, deceased, late of P.O. Box 1016, Pittsburg, Pa. 99574; Shirley R. Bleiberg, executrix, and John J. Jason, 21165 Escondido St., Woodland Hills, Calif. 91364

Filed Apr. 26, 1972, Ser. No. 247,869
Int. Cl. G09f *13/34*, *19/14*
U.S. Cl. 40—106.53 **10 Claims**

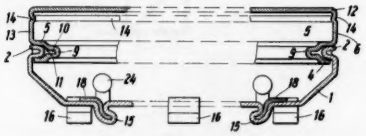


1. An illuminated visual display assembly comprising
a housing having a display opening,
a transparent display window secured within or adjacent said display opening,
said display window being curved with a concave surface facing the exterior of said housing and a convex surface facing the housing interior,
a composite transparency having at least two pictures with each picture being fragmented into a plurality of stripe-like picture segments of substantially uniform height disposed in spaced relationship with respect to each other, but disposed in abutting alternating relationship with respect to picture segments of at least one other picture,
a shutter member having generally parallel spaced darkened sections which resist picture display and generally parallel spaced transparent sections which permit picture display, said stripe-like picture segments of said transparency having a height greater than the height of said transparent sections of said shutter,
said transparency and said shutter disposed in intimate face to face contact adjacent said display window in relative registered position to permit sequential display of said fragmented transparency pictures through said display window,
drive means for establishing relative movement between said shutter and said transparency while retaining said intimate surface to surface contact therebetween to provide sequential display of said pictures with a predetermined dwell period for displaying said transparency pictures,
light source means disposed rearwardly of said shutter and said transparency, and
said drive means including a motor and at least one cam and cam follower operatively associated with one of said shutter and said transparency, whereby operation of said motor will effect relative movement between said shutter and said transparency.

3,862,505
ADVERTISING DEVICES

Rudolf Jeroma, 60 Bremen Stresemannstrasse 28, Bremen, Germany

Filed Feb. 26, 1973, Ser. No. 336,095
Claims priority, application South Africa, June 26, 1972, 72/4389; Germany, Feb. 25, 1972, 7207092
Int. Cl. G09f *13/00*
U.S. Cl. 40—132 R **15 Claims**

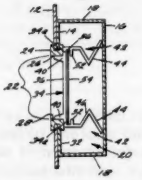


1. An advertising device having an internal source of illumination and which comprises a tray-like support structure; an inwardly directed bead which is carried by, and extends circumferentially around the edges of the support structure and which at each of the corners of the structure has a smaller depth than elsewhere; and a light transmitting cover having on its side walls an outwardly opening groove adapted to receive the bead in order to hold the cover in position; the reduction in depth of the bead at the said corners facilitating entry of the cover walls within the bead until the bead is received in the groove; the groove having a U-shaped cross-section, and the bead also being in the form of an outwardly opening U-shaped groove but of smaller width; the depth of groove of the support structure decreasing towards the corners; the groove of the cover further being formed with a beading integrally extending from the base of that groove and opening thereinto.

3,862,506
LABEL HOLDER

Bruce J. Drenten, Grand Rapids, and Frank S. Breiner, Kentwood, both of Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

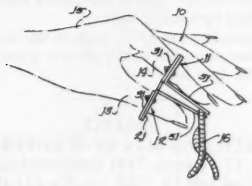
Filed Apr. 5, 1973, Ser. No. 348,332
Int. Cl. G09f *3/00*
U.S. Cl. 40—325 **18 Claims**



1. A label holder for use in a recessed pull construction, said pull including spaced front and rear surfaces forming a drawer pull cavity, said front surface having an opening therein to provide access to said cavity, said holder comprising: a face adapted for positioning in said opening; abutment means operably connected to said face for engaging said front surface of said pull when said face is positioned in said opening;

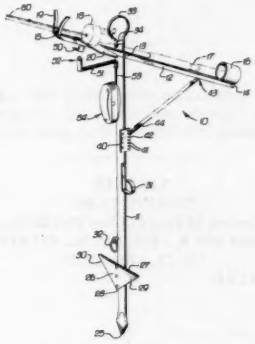
at least one integrally formed, rearwardly extending elongated resilient biasing flange extending rearwardly from said face and engaging said rear surface of said pull whereby said abutment means is biased into engagement with said front surface of said pull, thereby minimizing any tendency for said holder to rattle with respect to said pull.

3,862,507
FISH BAIT HOLDER
Emerson F. Martyn, 1807 Prospect St., La Salle, Ill. 61301
Filed Dec. 10, 1973, Ser. No. 423,478
Int. Cl. A01k *97/00*
U.S. Cl. 43—4 **4 Claims**



1. A fish bait holding device intended for use in the holding of bait, such as worms, in a manner protecting an individual's fingers from a fishing hook during the baiting of the bait on the fishing hook, the device comprising a pair of substantially identical sections adapted to be worn by an individual on their index finger and thumb respectively, each section comprising a substantially flat circular first ring member having a finger opening disposed concentrically thereof and extending therethrough, a face surface, a back surface, and a circumferential edge surface; a C-shaped second ring member of a diameter substantially equal to said first ring member and having a finger opening disposed centrally thereof and extending therethrough of a diameter substantially equal to said first ring member finger opening, said second ring member including a face surface, a back surface, a circumferential edge surface, and a first and second terminal edge, said second ring member disposed adjacent a top portion of said first ring member with said second ring face surface in juxtaposition with said first ring back surface and with said first and second finger openings in axial alignment, pivot means disposed adjacent a first of said terminal edges and pivotally connecting said second ring to said first ring for pivotal movement relative thereto wherby said second ring finger opening is movable into and out of the area of said first ring opening in a manner to adjustably restrict the area of said first ring opening, means securing said second ring to said first ring in said adjusted position, a substantially flat rectangularly shaped platform like member having one end connected to the bottom portion of said first ring face surface with said platform projecting outwardly therefrom in a direction substantially normal to the plane of said first ring, said platform having a top surface defining a finger rest portion, and a bottom surface defining a jaw member adapted to cooperate in the gripping of the bait whereby said sections may be used in conjunction with each other so as to grip bait between jaw members disposed in confronting relationship with each other under control of an individual's index and thumb for movement in directions toward and away from each other.

3,862,508
FISHING POLE HOLDER
John C. Morgan, 1735 El Serrano Ave., Apt. B5, Los Angeles, Calif. 90027
Filed Nov. 5, 1973, Ser. No. 412,746
Int. Cl. A01k *97/12*
U.S. Cl. 43—17 **10 Claims**

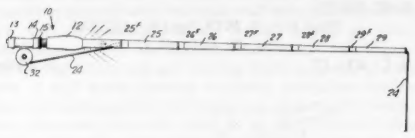


1. Apparatus for holding a fishing pole, comprising:
a support member arranged for being secured in a stationary location;
a pole holding arm pivotally secured at a point between its ends on said support member, said pole holding arm having mounted on one end thereof a cup for receiving the lower end of a fishing pole and on its other end upwardly extending V-shaped guide structure for holding a fishing pole therebetween, said pole holding arm further having slidably mounted thereon for longitudinal movement along at least a portion of its length a laterally extending plate for supporting the reel of a fishing pole being held by said pole holding arm;
means resiliently biasing said arm against pivotal rotational movement in a selected sense whereby said arm assumes a selected at rest position whenever a fishing pole is held thereby, said selected sense of pivotal movement of said arm being in the direction of an upward rotation of the end of said arm carrying said cup from said at rest position; and
alarm means for sensing the rotation of said arm in said selected sense from its at rest position to a circumferentially spaced apart alarm actuating position, said alarm means being operable to generate an alarm signal whenever said arm is rotated in said selected sense to said alarm actuating position whereby to alert a fisherman that a fish is pulling on the line of the fishing pole being held by said pole holding arm.

3,862,509
EYELESS FISHING POLE
John W. Petersen, Jr., Box 335, Frisco, Colo. 80576
Filed May 30, 1973, Ser. No. 365,146
Int. Cl. A01k *87/00*
U.S. Cl. 43—17.5 **1 Claim**

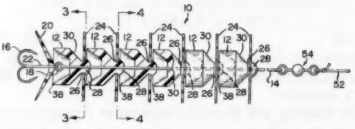
1. In an eyeless fish pole, a rod including an elongate hollow handle including a hand grip, fixed reel clamp member, and reel clamping nut, said handle having a butt end that is open for receiving a flashlight, a plurality of spring fingers for mounting said flashlight in said handle, said flashlight being reversible so that it can shine outwardly from the handle or along the handle and the rod, a light transmitting generally cylindrical body closing the end of the hollow handle opposite the butt end and secured therein, said body having an arcuate guide passage extending from the side thereof forwardly at one end thereof, said handle having an opening in the side

thereof communicating with said passage whereby a fish line can pass through the opening and passage, a plurality of ta-



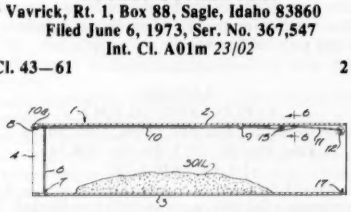
pered hollow light transmitting fishing rod segments each provided with a ferrule, and one of said rod segments having a reduced diameter exit defining a tip guide for the fish line.

3,862,510
FISHING LURE
Carmen A. Peterson, 38 Pilot Pl., New Port Richey, Fla. 33552
Filed July 9, 1973, Ser. No. 377,819
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.14 **9 Claims**



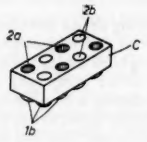
1. A fishing lure of the type capable of being towed through water, said lure comprising: support means, module means including a plurality of module members movably mounted on said support means in successively disposed relation to one another, said module members disposed in movable space relation to one another along at least a portion of the length of said support means, each of said module members comprising a module body, each of said module bodies movably mounted in substantially concentric relation to the longitudinal axis of said support means, each of said module members further comprising disk means mounted on each of said module bodies and extending radially outward therefrom, each of said disk means disposed on respective module bodies in cooperative engagement with relation to said module body positioned in adjacent relation thereto.

3,862,511
POCKET GOPHER TRAP
Oscar Vavrick, Rt. 1, Box 88, Sagle, Idaho 83860
Filed June 6, 1973, Ser. No. 367,547
Int. Cl. A01m *23/02*
U.S. Cl. 43—61 **2 Claims**



1. A trap for pocket gophers comprising:
an elongated metal tube having a flattened top wall, a rounded bottom wall and flat side walls connecting the top and bottom walls, the tube being at least as wide at the top of the side walls as at any level therebelow;
an apertured end closure metal plate fitting closely to the inside surface of the tube in one end thereof and having a plurality of small apertures therein;
the said end closure plate slidably supported by the tube for limited sliding movement lengthwise of the tube;
a stop loop in the top wall between the top of the closure plate and the adjacent end of the top wall;
an upstanding stop on the bottom wall of the tube and spaced inwardly of the tube toward the center thereof whereby to provide space for the limited sliding movement of the plate in the tube;
a swinging closure metal plate suspended within the tube at its other end and hinged at its top edge to the tube in juxtaposition to the flattened top wall;
a stop member on the bottom wall of the tube at its said other end, positioned within the path of the swinging closure plate and preventing swinging movement of the swinging closure plate out of the tube; and
a trip rod rigidly secured to the first named end closure plate said rod extending lengthwise of the tube immediately below the flattened top wall and slidably carried by said top wall;
said trip rod extending into the path of the swinging closure plate when the first named end closure plate is positioned against said upstanding stop;
said rod extending out of the path of the swinging closure plate when the first named closure plate is positioned against the stop loop.

3,862,512
SETS OF BUILDING BLOCKS OF DIFFERENT SIZES
Georg Vogel, 17 Auenweg, 7141 Schwieberdingen, Germany
Filed July 14, 1969, Ser. No. 841,498
Claims priority, application Germany, Aug. 8, 1968, 1703980
Int. Cl. A63h
U.S. Cl. 46—25 **6 Claims**



1. A building block set comprising a plurality of blocks of different sizes each having at least one connector for connecting the blocks to each other, said connector including a plug projecting from a block at one of the faces thereof and a socket formed in the block at the opposed face thereof and aligned with said plug, the connectors of those blocks of the set which have less than three connector being formed of one size to provide a relatively tight fit for all of said less than three connectors thereon while the connectors of those blocks which have more than three being formed with some of the aligned plug-and-sockets of the same size to provide a tight fit and some sockets of a larger size than their associated plugs to provide a looser fit for some but not all of the connectors thereof, said connectors on said larger blocks being arranged so that no two connectors of relatively tight fit be adjacent each other.

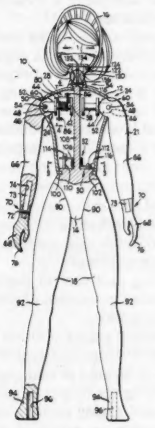
3,862,513
ARTICULATED FIGURE TOY
Anson Isaacson, Chicago, and Burton C. Meyer, Downers Grove, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Feb. 15, 1974, Ser. No. 442,900
Int. Cl. A63h *13/12*
U.S. Cl. 46—119 **17 Claims**

9. A figure toy in the form of an articulated doll, comprising:

an upper torso portion and a lower torso portion connected together at a waist joint for relative rotation of one with respect to the other about a generally vertical axis when the doll is in a generally erect disposition;

torso biasing means operatively associated between said upper and lower torso portions normally biasing the upper torso portion tc a generally forwardly directed orientation relative to the lower torso portion to permit the upper torso portion to be pivoted about said vertical axis relative to the lower torso portion against the force of said biasing means, whereby the biasing means, upon release of said upper torso portion, will move said upper torso portion rapidly back toward its forwardly directed orientation;

an arm member movably mounted on said upper torso portion generally at a shoulder joint for rotation relative



to said upper torso portion about an axis extending generally perpendicular to said vertical axis;

arm biasing means operatively associated between said arm member and said upper torso portion normally biasing the arm member to a forward position to permit the arm member to be moved relative to the upper torso portion against the force of said arm biasing means, whereby the arm biasing means, upon release of said arm member, will move said arm member rapidly back toward its forward position;

a pair or articulatable leg members journalled generally at the base of said lower torso portion; and

a second arm member mounted on said upper torso portion for generally universal movement relative thereto, both arm members having hand portions on the ends thereof for grasping a manipulatable implement by moving the hand portions together for operative association.

3,862,514

RADIO CONTROLLED TOY AUTOMOBILE

Minoru Ueda, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan

Filed Mar. 13, 1973, Ser. No. 340,900

Claims priority, application Japan, Mar. 14, 1972, 47-025974

Int. Cl. A63h *17/36*

U.S. Cl. 46—244 B **4 Claims**

1. A toy vehicle comprising:

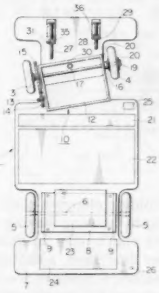
a. a body;

b. a front axle and a rear axle mounted on said body;

c. an idler wheel and a driven wheel coaxially mounted in axially spaced relationship on one of said axles;

d. an idler wheel on the other axle;

e. pivot means operatively interposed between said one axle and said body permitting movement of said one axle about a pivot axis transverse to the common axis of said idler wheel and of said driven wheel on said one axle;



f. drive means for rotating said driven wheel about said common axis relative to said coaxial idler wheel;

g. abutment means for limiting movement of said one axle about said pivot axis; and

h. control means for energizing and deenergizing said drive means.

3,862,515

PERMANENT MAGNET SEALING AND CLOSURE MEMBER

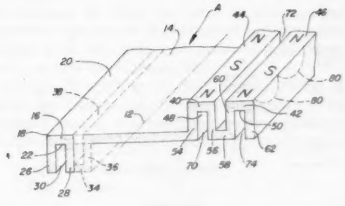
Max Baermann, 506 Bensberg, Bezirk-Cologne, Germany

Filed May 15, 1973, Ser. No. 360,581

Claims priority, application Germany, Mar. 13, 1973, 2312291

Int. Cl. E06b *7/23*

U.S. Cl. 49—478 **13 Claims**

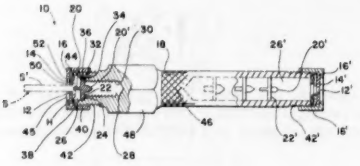


1. A magnetic sealing and closure member comprising; an elongated strip of flexible permanent magnet material having a longitudinal axis, said strip in transverse cross section having a generally uniform thickness and including a plurality of transversely spaced portions, each having a substantially plane sealing surface, a plurality of legs extending generally perpendicularly away from each said surface and being spaced-apart in a direction transversely of said longitudinal axis means integrally joining the ends of said legs remote from said sealing portions, said sealing portions being magnetized to have alternating magnetic poles along said sealing surface so that magnetic lines of force extending between adjacent ones of said magnetic poles take arcuate courses within said legs, and a mounting edge portion integral with an end of a leg remote from its sealing portion and extending at an angle thereto.

3,862,516
PIN VISE

Mary E. Broscoff, P. O. Box 344, Alamogordo, N. Mex. 88310, and Edd Tackett, P. O. Box 655, Chambersburg, Pa. 17201

Filed June 5, 1974, Ser. No. 477,067
Int. Cl. B25b 3/00
U.S. Cl. 51—217 P 7 Claims

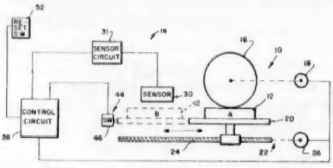


1. A vise for holding elongate-shank headed objects, comprising: an elongate housing having forward and rearward ends, the forward end having an axial opening with coaxial larger and smaller diameters, a shoulder between said larger and smaller diameters, a member protrusive inwardly into the larger diameter proximate the shoulder, a tool disk having a periphery proportioned for sliding fit with said larger diameter, with a notch therein for receiving the inwardly protrusive member; a tool bit axially protrusive from the tool disk; a cover disk having a central aperture proportioned for freely receiving a shank of a said headed elongate-shank object with the head thereof against a face of said cover disk, said forward end of the housing having a thread thereon, and a cylindrical cap having an end with a central aperture therein smaller than said cover disk and an internal thread positioned for engaging the thread on the housing forward end, said cover disk being located within said cap.

3,862,517
METHOD AND APPARATUS FOR MACHINING A WORKPIECE TO A SELECTED DIMENSION

Wallace M. Porter, Jr., 1707 Herrin St., Redondo Beach, Calif. 90277

Division of Ser. No. 214,920, Jan. 3, 1972. This application Dec. 26, 1973, Ser. No. 428,504
Int. Cl. B24b 1/00, 49/04
U.S. Cl. 51—91 R 12 Claims



1. The method of machining a workpiece to reduce a selected dimension of the workpiece to a predetermined value comprising the steps of:

selecting a machining tool which is operable to machine said workpiece when said workpiece is located in machining position relative to said tool;

selecting an electrical gaging sensor which produces a continuous output signal that assumes a true gaging signal level representing the true value of said workpiece dimension when said workpiece is located in gaging position relative to said sensor and varies from said true signal level through a range of signal levels corresponding to other values of said workpiece dimension in response to movement of said workpiece from said gaging position;

effecting relative movement of said workpiece and said tool and sensor in a manner such that the relative movement of said workpiece with respect to said tool and sensor occurs through said machining and gaging positions in alternate sequence;

producing a gaging position signal in addition to and totally distinct from said sensor output signal when said workpiece is located in said gaging position;

monitoring the output of said sensor only during occurrence of said gaging position signal; and

machining said workpiece with said tool when said workpiece is in said machining position in such a way as to progressively reduce said selected workpiece dimension until simultaneous occurrence of said gaging position signal and an output gaging signal from said sensor representing said predetermined dimension value.

7. Apparatus for machining a workpiece to reduce a selected dimension of the workpiece to a predetermined value, comprising:

a machining tool which is operable to machine said workpiece when said workpiece is located in machining position relative to said tool;

an electrical gaging sensor which produces a continuous output signal that assumes a true gaging signal level representing the true value of said workpiece dimension when said workpiece is located in gaging position relative to said sensor and varies from said true signal level through a range of signal levels corresponding to other values of said workpiece dimension in response to movement of said workpiece from said gaging position;

means for effecting relative movement of said workpiece and said tool and sensor in a manner such that the relative movement of said workpiece with respect to said tool and sensor occurs through said machining and gaging positions in alternate sequence;

means for operating said tool to machine said workpiece during each relative movement of said workpiece through said machining position;

means for producing a gaging position signal in addition to and totally distinct from said sensor output signal when said workpiece is located in said gaging position;

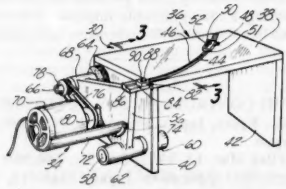
means for monitoring the output of said sensor only during occurrence of said gaging position signal; and

machining said workpiece with said tool when said workpiece is in said machining position in such a way as to progressively reduce said selected workpiece dimension until simultaneous occurrence of said gaging position signal and an output gaging signal from said sensor representing said predetermined dimension value.

3,862,518
TRIMMER DEVICE FOR ROTARY ENGINE SIDE SEALS

Jerome J. Bush, Holland, Mich., assignor to Sealed Power Corporation, Muskegon, Mich.

Filed Jan. 10, 1974, Ser. No. 432,412
Int. Cl. B24b 7/00, 9/00, 41/06
U.S. Cl. 51—99 13 Claims



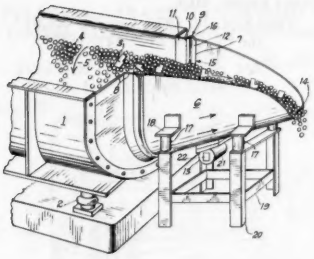
10. A rotary engine side seal trimmer device comprising a base, retainer means carried by said base for releasably retaining at least two elongate side seals for a rotary engine in spaced apart side by side relationship each in the generally curved state it assumes when assembled in a rotary engine, a rotary tool carried by said base for movement relative to said

retainer means generally transverse to one end of elongate side seals received in said retainer means to remove material from the one end of the elongate side seals such that the overall length of each of the elongate side seals is decreased, and a first stop associated with said retainer means to simultaneously bear on the other end of each of the side seals received in said retainer means to determine the overall length of each of the side seals in the retainer means from which material is removed from said one end thereof by said rotary tool.

3,862,519
VIBRATORY DEVICE FOR FINISHING PARTS WITH DELIVERY CHUTE

Harvey G. Van Fossen, 54733 Winding Brook Dr., Mishawaka, Ind. 46544

Continuation of Ser. No. 156,699, June 25, 1971, abandoned. This application June 6, 1973, Ser. No. 367,359
Int. Cl. B24b *31/00*
U.S. Cl. 51—163 **6 Claims**

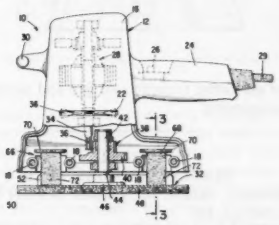


1. A vibratory device in which parts are processed with media for surface treatment of the parts comprising a bowl mounted for vibratory movement and having an inlet at one end portion and an outlet at another end portion, vibratory means operatively connected to the bowl to cause said parts and media within the bowl to travel about the bowl in an orbitol path, an elongate delivery chute having an outlet at one end and an inlet at the other end in endwise alignment with the outlet of the bowl and linearly spaced therefrom, means mounting the delivery chute for vibratory movement on a stationary support which is independent of the support for the bowl for vibratory movement of the chute independent of the bowl, vibratory means operatively connected to the delivery chute for independent vibratory movement of the chute in a direction for placement of the parts and media along a substantially linear path from the inlet to the outlet, said vibratory means being adjustable for variation of the vibratory movement of the delivery chute to regulate the flow of parts and media thereon independent of the bowl, said delivery chute comprising an elongate member having a bottom wall and vertically disposed side walls, and a flexible coupling connecting the bowl outlet with the delivery chute inlet while permitting independent vibratory movement of the bowl relative to the chute, and in which the vibratory means for the chute comprises an eccentric shaft mounted for rotational movement about an axis which is crosswise of the path of linear movement from the inlet to the outlet of the chute.

3,862,520
SUPPORT ASSEMBLY FOR A PORTABLE SURFACE-TREATING MACHINE

Elmer C. Klebe, Jr., Easley, and Timothy J. Looper, Pickens, both of S.C., assignors to The Singer Company, New York, N.Y.

Continuation-in-part of Ser. No. 442,518, Feb. 14, 1974,. This application Aug. 9, 1974, Ser. No. 495,935
Int. Cl. B24b *23/04*
U.S. Cl. 51—170 MT **6 Claims**



1. A support assembly for an electrically-driven surface-treating machine in which the motor and means driven thereby for oscillating a platen are mounted in a clamshell housing having a first and a second complementary segment, the support assembly comprises:

a. a plurality of resilient posts including a hollow column terminatinng in a substantially perpendicularly extending flange,

b. the hollow column having an internally extending shoulder formed adjacent the bottom thereof,

c. a nut insertable into the column to nest upon the shoulder,

d. a plurality of recesses formed in the segments of the housing extending in aligned pairs transversely disposed on either side of the clamshell housing,

e. the flanged end of one of the posts is disposed in each of the recesses to place the posts in pairs connected to opposite segments of the clamshell housing whereby the flanged ends will abut each other to hold the posts securely within the recesses, and

f. a plurality of screw means passing through the platen to secure the same to each of the resilient posts by treadedly engaging the nut whereby the platen and housing will be resiliently connected to permit the platen to oscillate.

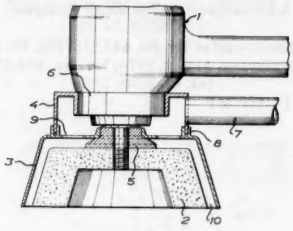
3,862,521
ABRASIVE GRIT EXHAUST SYSTEM IN GRINDING MACHINES

Lars Goran Torsten Isaksson, Hogbyvagen, Sweden, assignor to Teda-Lab I Eskilstuna AB, Eskilstuna, Sweden

Filed Apr. 12, 1973, Ser. No. 350,640
Claims priority, application Sweden, Apr. 14, 1972, 4833/72
Int. Cl. B24b *55/06, 23/00*
U.S. Cl. 51—273 **5 Claims**

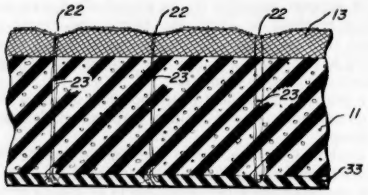
1. In a grinding apparatus having a rotary grinding wheel and exhaust means for aspirating dust produced by grinding, the improvement which comprises a housing on the apparatus defining an exhaust passage of said exhaust means, and an abradable cover supported for rotation relative to said housing and in unison with the grinding wheel, said abradable cover and a working surface of the grinding wheel being disposed for concurrent abrasrive contact with a workpiece to be ground,

said abradable cover being disposed to define with the grinding wheel a gap in flow communication with said exhaust



passage for aspirating through said gap and passage dust produced from grinding.

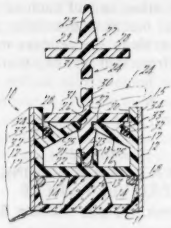
3,862,522
NEEDLED SCOURING PAD
Edward Mednick, Skokie, Ill., assignor to Fiber Bond Corporation, Chicago, Ill.
Filed Aug. 10, 1973, Ser. No. 387,329
Int. Cl. B24d *11/02*
U.S. Cl. 51—400 **10 Claims**



1. A composite scouring pad comprising a non-woven fibrous layer and a layer of flexible foam in juxtaposition to each other, said foam layer being bonded to said fibrous layer by fibers from said fibrous layer, at least some of said bonding fibers passing through the entire thickness of said foam layer and emerging from the surface of said foam layer opposite said fibrous layer, the fibers in said fibrous layer being coated with a resinous material and said opposite surface of said foam layer being coated in its entirety with a resinous material with said fibers emerging from said opposite surface providing roughness thereto.

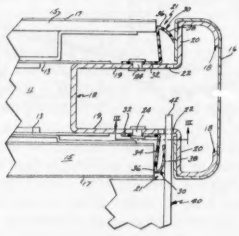
3,862,523
PANEL CONSTRUCTION FOR DISPLAYS
Robert F. Eaton, 7753 S. Oconto, Bridgeview, Ill. 60455
Filed July 2, 1973, Ser. No. 375,493
Int. Cl. G09f *15/00*; **E04b** *1/343*
U.S. Cl. 52—27 **24 Claims**

1. In combination, a channel member comprising a channel base and transversely spaced channel sides defining an outwardly opening channel, retaining means comprising inner and outer locating means carried by said channel member, said inner locating means defining an outwardly opening inner locating slit extending longitudinally within said channel adjacent the base thereof, said outer locating means defining an outwardly opening outer retaining slit extending longitudinally of said channel and opening thereinto at a location spaced outwardly from said inner locating slit, an insert extending longitudinally of said channel, said insert having a neck extending through said outer retaining slit, said insert having a spade portion extending inwardly from said neck into said inner locating slit, said neck and spade portion being located within said outer and inner slits respectively by engagement respectively with said outer and inner locating means, said spade portion enlarging to a greater transverse dimension than



said outer retaining slit to provide shoulder means located inwardly of the latter slit, and said outer locating means having an edge defining an edge of said outer retaining slit and overlying said shoulder means outwardly thereof.

3,862,524
HANGER SYSTEM FOR PARTITIONS
Lonnie L. McCrackin, Grandville, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.
Filed Sept. 28, 1973, Ser. No. 401,653
Int. Cl. A47b *5/02*; **A47g** *19/02*
U.S. Cl. 52—36 **8 Claims**



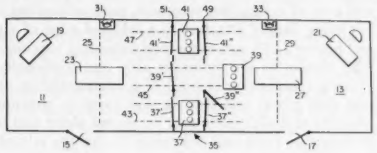
1. In a partition having a recessed hanger support means accessible through an opening in said partition said hanger support means being adapted to receive hanger means for supporting components on said partition, the improvement comprising;

cover means for said opening, said cover means being hingedly displaceably mounted adjacent said opening and extending to close said opening, said cover means being deformable upon insertion of a hanger means through said opening and into said hanger support means.

3,862,525
MEDICAL OFFICE FACILITY WITH TWO OR MORE EXAMINING ROOMS HAVING A COMMON EQUIPMENT CORE AREA
Donald J. Greenspan, Riverside, N.J.
Division of Ser. No. 57,981, July 24, 1970, Pat. No. 3,742,932.
This application June 28, 1973, Ser. No. 374,372
Int. Cl. E04h *3/08*
U.S. Cl. 52—64 **6 Claims**

1. A medical facility structure comprising partitions forming a plurality of medical examining rooms and an equipment storage area including a common core area located physically between portions of each pair of examining rooms and an enlarged area is open communication with said core area, said storage area being formed in part by partitions common to said medical examining rooms, said partitions including mov-

able closures associated with openings in said partitions so as to permit personnel ingress and egress from said medical examining rooms in a traffic flow pattern away from said core area, said partitions further including closures for equipment openings in portions of said partitions common to said core area and said medical examining rooms so as to permit access



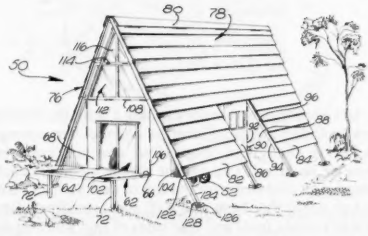
to movable equipment in said core area, and room medical equipment including a medical examining table located in said medical examining room so as to permit movement of said movable equipment from said core area through said equipment openings and into said medical examining rooms into close proximity with said examining table.

3,862,526

FOLDABLE A-FRAME MOBILE HOME

Joseph B. Loughlin, 9172 Christine, Huntington Beach, Calif. 92646

Filed Dec. 11, 1972, Ser. No. 314,051
Int. Cl. E04b *1/344*
U.S. Cl. 52—70 **5 Claims**



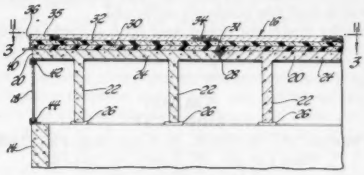
1. An expandable mobile home comprising:
a base support structure forming a floor member;
a floor extension structure foldable in a first position for transporting said home and foldable in a second position to form an extension of said floor member; and
means for releasably securing said floor extension structure to a hinge member enabling said floor extension structure to move in a plane parallel to said base support structure during assembly thereof with a first portion of said hinge member being permanently fixed to said floor member and a second portion of said hinge member being permanently fixed to said floor extension structure when said floor extension structure is moved in a plane parallel to the base support structure during assembly, said hinge member being formed of a pin fixedly positioned on one of said hinge member portions and a rotatable plate having a semi-cylindrical end rotatable on said pin adjustably positioned on the other of said hinge member portions in a plane parallel to the plane of said floor to which said other hinge member is secured, said rotatable plate having vertical reinforcing ridges formed in a plane perpendicular to the plane of said plate; said floor extension structure being foldable between said first and second position when said hinge member is in a second position.

3,862,527

ROOF CONSTRUCTION

Charles M. Peterson, Franklin, Mich., assignor to Harry S. Peterson Company, Pontiac, Mich.

Filed June 14, 1973, Ser. No. 369,829
Int. Cl. E04d *3/26, 3/32*
U.S. Cl. 52—94 **5 Claims**



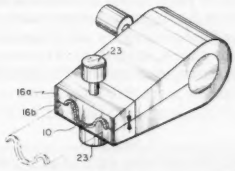
1. An insulated roof construction for a building having walls and a roof structure characterized by the absence of a mass waterproofing membrane covering the roof structure and comprising: at least two precast concrete members spanning the walls and defining at least one intersection joint wherein the members are in reasonable proximity to one another, a flexible polymeric sealant spanning the joint and substantially adhering to the concrete structures on opposite sides thereof, a layer of relatively light and substantially non-sealing thermally insulative material freely disposed directly on the concrete members, and a layer of particulate weighting material disposed over the insulative material layer and of such thickness as to protect the insulative material from exposure and to prevent the insulative material from movement due to wind.

3,862,528

DEPLOYABLE BOOM

Hans F. Meissinger, Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 34,311, May 4, 1970, abandoned. This application June 23, 1972, Ser. No. 265,524
Int. Cl. E04h *12/16*
U.S. Cl. 52—108 **1 Claim**



1. A deployable boom device comprising:
a rotary cylindrical drum;
a deployable boom including a single resilient strip only of substantially uniform thickness and open corrugated cross-section, said strip being flattened and fixed at one end to said drum and having preformed longitudinally extending corrugations whose surfaces are totally exposed and accessible at opposite sides of the strip and longitudinal edges located laterally outboard of said corrugations;
means for rotating said drum to wind said strip in flat condition on said drum for storage and unwind said strip from said drum for deployment;
a deployment horn enclosing said drum and having an exit opening through which said strip passes, said opening having a corrugated cross-section matching the solid corrugated cross-section of the strip and being defined by spaced, parallel corrugated side boundary walls complementing the corrugated surfaces of the strip, and a uni-

form width measured between said boundry walls approximating said uniform thickness of said strip, said corrugated boundry walls engaging said corrugated surfaces of said strip for reforming said strip to its corrugated configuration and reinforcing said strip as it deploys through said openings;

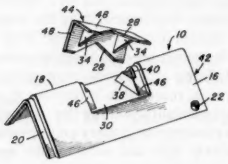
said horn including separable sections having confronting parting surfaces, portions of which parting surfaces constitute said side boundary walls; and

clamping means for urging said horn sections together to firmly clamp said strip between said boundary walls.

3,862,529
RIDGE CAP

Peter Markos, 281 NE 40th St., Ft. Lauderdale, Fla. 33308

Filed July 23, 1973, Ser. No. 381,765
Int. Cl. E04b 7/18
U.S. Cl. 52—199 **8 Claims**

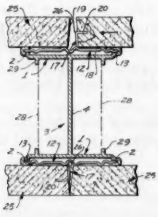


1. A ventilating ridge cap mountable along and enclosing the ridge of a roof defined between a pair of oppositely pitched roof sections, said ridge cap having a closed top and including opposed side panels, a transverse opening through an intermediate portion of each panel, said openings being transversely aligned, a closed bottom panel extending between said side panels at the base of the openings, and baffles projecting upwardly from the bottom panel, said baffles being oriented along the opposite sides of the openings and bottom panel and extending between said side panels, said openings, bottom panel and baffles defining a through said ridge cap, said baffles terminating below the top of said side panels and defining laterial air path means through the opposed sides of the passage, said air paths means communicating said passage with the interior of the ridge cap between said panels laterally of the passage and constituting the sole means of such communication, said side panels, laterally of the passage, defining an open bottom for communication with the interior of an underlying roof.

3,862,530
MOUNTING MEANS FOR WALL PANELS

Walter I. Martine, Rowland Heights, Calif., assignor to Uni Wall Industries, Inc., Glendale, Calif.

Filed Jan. 18, 1973, Ser. No. 324,672
Int. Cl. E04b 2/52
U.S. Cl. 52—281 **13 Claims**



1. A building structure, comprising:

a. an elongated mounting strip having longitudinally extending side margins defining mutually facing coplanar spaced track channels offset from the mounting strip;

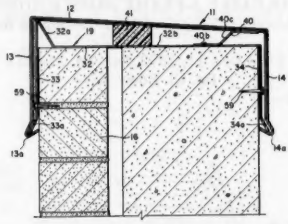
b. a set of slide plates, each slide plate including opposed longitudinal margins slidably fitting into the spaced track channels and a transverse pair of margins extending between the track channels and spaced from the mounting strip;

c. and a set of connecting members, each connecting member being fixedly attached to a selected edge of a panel and having a clip means thereon extending longitudinally with respect to the mounting strip and frictionally embracing a transverse margin of a corresponding one of said slide plates and holding said panel in position and whereby said slide plate may be moved along said tracks to disengage from said clip means to thereby release said panel from said mounting strip.

3,862,531
COPING STRUCTURE

Julian J. Attaway, and Randolph W. Driggers, both of Tucker, Ga., assignors to Miscellaneous Manufacturing Corporation, Tucker, Ga.

Filed Sept. 7, 1973, Ser. No. 395,277
Int. Cl. E04f 19/02
U.S. Cl. 52—300 **15 Claims**



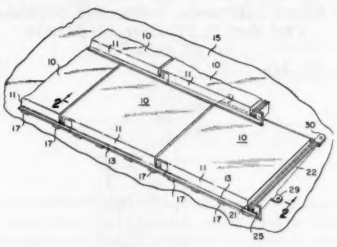
1. In a coping structure for capping a wall, the combination which includes; a pair of inverted channel-like coping members having contiguous longitudinal end portions forming a transverse seam and said pair of coping members each comprising a web disposed over the top of said wall, and front and rear legs projecting from said web and extending adjacent to said wall outside front and rear sides of said wall respectively, said front and rear legs of each of said pair of coping members including portions to be engaged for restraining said coping member at least against upward movement forwardly and rearwardly in said coping structure; and splice and first support means, said means including a splice member comprising front and rear legs and a web interconnecting said splice member legs, said splice member legs and web being across said seam and in overlap with said legs and webs of said pair of coping members inside the channels of said pair of coping members, and splice support structure securely on said wall and including a web and front and rear legs interconnected by said web of said splice support structure, said front and rear legs and web of said splice support structure being disposed intermediately of said wall and said front and rear legs and web of said splice member, said front leg of said splice support structure having a portion to be engaged with said front leg portions of said pair of coping members for arresting at least upward movement of said pair of coping members, and said rear leg of said splice support structure having a portion for being engaged with said rear leg portions of said pair of coping members for arresting at least upward movement of said pair of coping members, said splice support structure web comprising a raised forward web portion supported by said front leg of said splice support structure for said splice support structure to sustain said splice member web while said splice member web is contiguous to said webs of said pair of coping

members forwardly in said coping structure and impede said pair of coping members forwardly against downward movement, having said pair of coping members arrested at least against upward movement through said portions of said front legs of said pair of coping members and said front leg portion of said splice support structure being engaged, and said splice support structure further being characterized by said web thereof having a lower rearward portion adjacent to the top of said wall, and said splice and first support means further including resilient biasing means extending deflected intermediately of said web of said splice support structure and said splice member web for supporting said splice member web while said splice member web is against said webs of said pair of coping members at least rearwardly of said forward raised web portion of said splice support structure and said front leg portions of said pair of coping members are engaged with said front leg portion of said splice support structure at least against upward movement of said pair of coping members forwardly in said coping structure and said rear leg portions of said pair of coping members and said rear leg portion of said splice support structure re engaged at least against upward movement of said pair of coping members rearwardly in said coping structure.

3,862,532
ROOF TILE

Peter Markos, 281 N.E. 40th St., Fort Lauderdale, Fla. 33308

Filed Mar. 8, 1973, Ser. No. 339,271
Int. Cl. E04d *1/20, 3/32*
U.S. Cl. 52—521 **1 Claim**

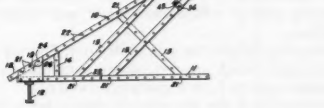


1. A one-piece plastic material roof tile comprising: a planar sheet body of rectangular configuration having a lower end wall depending therefrom, an upper end wall depending therefrom and of a less height than the lower end wall; a pair of laterally spaced parallel channels formed in the tile body parallel to and laterally outwardly from one side thereof between the upper and lower end walls and being open at both ends; the tile body having a side wall adjacent said channels having throughout its length and intermediate its top and bottom edges a lateral flange extending outwardly from said wall and constituting a bottom common to both channels, which bottom lies in a plane parallel to and spaced above a plane common to the bottom edges of the side wall and thereby provides an air space beneath and coextensive with said channels; the outer side wall of the outer channel depending from said bottom flange at a point closer to the lower end of the tile than its upper end and terminating in an outwardly extending foot flange constituted as a nailing tab offset below the bottom edge of the outermost channel side wall; the other side of the tile body having a laterally outward marginal extension of the planar sheet body provided with a depending connector flange constructed and arranged for interlocking seating engagement in the outer channel of an identical tile if and when interlocked therewith in service; the inner one of said pair of parallel channels being open at its top through its length when in service position; the marginal portion of the lower end wall adjacent said marginal extension being inwardly offset to provide a recess open to that side edge of the tile; said lower end wall at the channeled side of the tile having a longitudinal extension exactly complemental to said recess; intermediate support ribs depending from the tile body in parallel spaced relation between the upper and lower end walls and together with said side wall having longitudinally alternate solid portions and ventilation apertures open to their bottom edges; said channel common bottom flange projecting outwardly beyond the upper end wall of the tile and downwardly offset relative to the bottom edge of said upper end wall and constituted as a second nailing tab disposed in a plane common to the first-named nailing tab; the bottom edges of the solid portions of the support ribs and side wall lying also in said plane common to the first and second nailing tabs, whereby the bottom edges of the upper and lower end walls of the tile will at all times be spaced above any surface on which the tile is mounted in service position; and a third nailing tab extending from the tile body flush with the bottom edge of its upper end wall in longitudinal alignment with said interlocking connector flange.

3,862,533
TRUSS SYSTEM

James B. Fuss, College Park, and John S. Faye, Chamblee, both of Ga.

Continuation of Ser. No. 136,228, April 21, 1971, abandoned.
This application Apr. 9, 1973, Ser. No. 349,415
Int. Cl. E04c *1/26*
U.S. Cl. 52—643 **2 Claims**



1. In a truss system for use in a building construction comprising, in combination:

a. a first support beam defining a plurality of apertures equally spaced a first predetermined distance along its length;

b. a second support beam extending at an angle from said first support beam and defining a plurality of apertures equally spaced a second predetermined distance along its length;

c. a third support beam extending between said first support beam and said second support beam and defining a plurality of apertures equally spaced a third predetermined distance along its length; and

d. a connecting means extending through mated apertures at the intersection of said beams for forming said beams into an assembled building truss, said space between openings in each of said support beams detailed such that said openings in said second and third support beams are aligned with each other and aligned with a line drawn perpendicular to said first support beam and through an opening in said first support beam when said three support beams are connected in said assembled relationship, and wherein a line drawn at right angles to said line extending between the aligned openings in said first, second and third support beams and passing through an opening in said second support beam will also pass through an opening in said third support beam, said truss system including means for connecting an assembled truss to an adjacent assembled truss comprising a U-shaped bridging clamp including a base portion and leg portions, a hold tab co-extensive with one of said leg portions and defining a slot therein, a centrally apertured connecting tab extending at an angle of substantially ninety degrees from

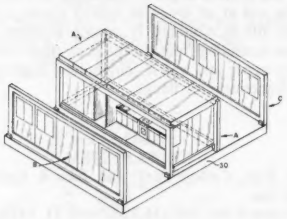
the other of said leg portion, a bridging bar wedged into said slot of the holding tab, and connecting means extending through the aperture of said connecting tab into said bridging bar whereby the two adjacent assembled trusses are secured together in a predetermined fixed position.

3,862,534

METHOD OF CONSTRUCTING A DWELLING

Hugo Coletti, 1454 Wilson Ave., San Juan, P.R. 00907

Filed Dec. 15, 1972, Ser. No. 315,565
Int. Cl. E04g *21/00*; E04h *1/04*
U.S. Cl. 52—745 **1 Claim**



1. The method of constructing a dwelling which consists in the steps of:

a. prefabricating off-site a central modular part of the dwelling in the form of a rectangular parallelopiped having a floor, end walls and open sides, and containing functional rooms such as a kitchen, closets, a bathroom, utilities for the completed dwelling such as plumbing, electrical, heating and air conditioning units, and outlets for the utilities,

b. fabricating off-site the side walls, roof, flooring, columns and beams which are required in combination with the modular part to form a complete dwelling,

c. constructing at the site a foundation larger in horizontal area than the central modular part,

d. placing the central modular part on a part of the foundation,

e. erecting on other parts of the foundation in horizontally spaced relation to the central modular part the side walls which have been fabricated off-site,

f. connecting the side walls and the central modular part with beams,

g. erecting a roof supported by the side walls, central modular part and beams,

h. installing a floor in the spaces between the side walls and the central modular part, and

i. enclosing with walls the open spaces between the central modular part, the roof and the side walls.

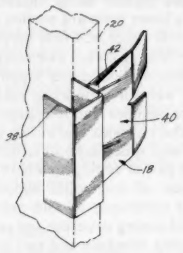
3,862,535

CLIP FOR NON PROGRESSIVE WALL CONSTRUCTION

George J. Byssing, 1549 Poppy Peak Dr., Pasadena, Calif. 91105

Division of Ser. No. 166,422, July 27, 1971, Pat. No. 3,732,660, which is a continuation of Ser. No. 877,248, Nov. 17, 1969, abandoned. This application Apr. 23, 1973, Ser. No. 353,656
Int. Cl. F16b *2/20*
U.S. Cl. 52—753 W **4 Claims**

1. A clip for use in securing wallboards to parallel I-beams in butting relationship in a random, non-progressive sequence without flexing of the wallboard to perfect locking engagement with a pair of parallel I-beams when the clips are engaged to opposed sides of the wallboard which comprises a substantially el-shaped member providing a first wall adapted to be inserted between two adjacent connected surfaces at least one of which is a wallboard, and a second wall at substantially right angles to the first wall, said second wall having an angled portion at the end opposed to the intersection of the first wall with the second wall to communicate with and establish sliding relation over the edge of a flange of an I-beam, a portion of said second wall extending outwardly in a direction opposed to the direction of the angled portion to provide an



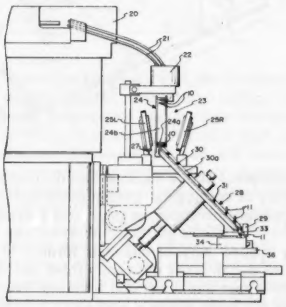
I-beam engaging end at approximately the intersection of said first and second walls, said extending portion of the second wall adapted to slidably engage and interlock with the flange of the I-beam whereby a wallboard provided with said clips engaged to opposed side thereof will be securably locked to a pair of adjacent parallel I-beams provided a force on the wallboard normal to the surfaces of the flanges of the I-beams.

3,862,536

HIGH SPEED LOADING OF REEDBLADES

Kenneth W. Litchfield, Chicago, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 21, 1973, Ser. No. 343,616
Int. Cl. B65b *5/08*
U.S. Cl. 53—246 **7 Claims**



1. In a reedloading machine having an indexing device for advancing a rack comprising a plurality of receptacles past a loading station where reeds are loaded into the receptacles, a high-speed loading apparatus comprising:

feeder means for disentangling a plurality of said reeds and orienting said reeds in a common direction;

magnetic hopper means for storing each of said directionally oriented reeds including a non-magnetic storage magazine having an input at the top and output at the bottom and means for establishing a magnetic field horizontally across said magazine to thereby magnetize and maintain said reeds in a substantially horizontal orientation and substantially parallel to one another; and

conveyor means including a rotating wheel disposed between said magazine output and said loading station, said wheel having a beveled edge with slots provided therein at equal intervals around the circumference thereof, said wheel being positioned such that said beveled edge is substantially horizontal at a point coincident with said

magazine output and substantially vertical at a point adjacent to said loading station, and means for selectively creating a vacuum in said slots;

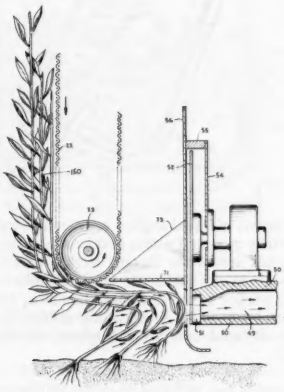
whereby upon rotation of said wheel said horizontally oriented reeds are taken up in said slots and secured therein by said vacuum, transported to said loading station while simultaneously being re-oriented substantially vertically, and released such that each of said reeds fall by gravity into a corresponding one of said storage rack receptacles.

3,862,537

MECHANICAL ELIMINATION OF AQUATIC GROWTHS

Merle P. Chaplin, 609 Driver Ave., Winter Park, Fla. 32789

Filed May 29, 1973, Ser. No. 364,283
Int. Cl. A01d *45/08*
U.S. Cl. 56—9 **28 Claims**



1. Apparatus for removing aquatic growths from a predetermined area of a body of water, comprising a downwardly movable open mesh belt, a structure arranged to support said belt, means mechanically coupled to said structure and said open mesh belt for moving said structure and said belt into an area of upstanding aquatic growths during which the water passes through the open mesh belt and the aquatic growths adhere to its surface, means arranged to move the belt downwardly to an area adjacent to the root structure of said aquatic growths, a conduit having an entry arranged to receive the aquatic growths, vacuum means for transporting said growths and roots from the area, and means disposed adjacent to the entry of said conduit for cutting the growths into short pieces prior to their entry thereinto.

3,862,538

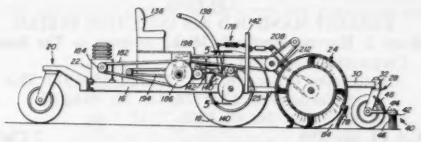
NUT HARVESTING MACHINE

James A. Henson, Box 8, R.R. No. 1, Chetopa, Kans. 67336

Filed Mar. 14, 1972, Ser. No. 234,550
Int. Cl. A01d *51/00*
U.S. Cl. 56—328 R **24 Claims**

9. A harvester for crops lying on the ground including a housing, pickup means projecting from the housing at one axial end for lifting the crop off the ground, sweeping means projecting from the housing for laterally displacing the crop along the ground toward said pickup means, vehicle means for propelling the housing in one direction, wheel means secured to the housing forwardly thereof in said one direction for support of the housing in operatively spaced relation to the ground and conveyor means for receiving the crop from the pickup means.

24. In combination with a harvester having pick-up means, a crop conveyor having a delivery end and a receiving end into which objects are deposited by the pick-up means, said crop conveyor comprising an elongated trough having downwardly converging bottom walls extending between the receiving and delivery ends, a flexible drive element mounted on one of the



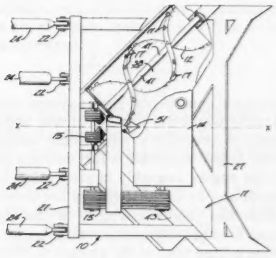
bottom walls spaced from the other of the bottom walls of the trough, a plurality of crop displacing members secured to the drive element for movement along said one of the bottom walls and protective means fixed to said trough in overlying relation to the drive element adjacent to the receiving end of the trough.

3,862,539

GROUND CLEARING ATTACHMENT FOR TRACTORS

J. L. Stevens, P.O. Box 374, Eureka, Mont. 59917

Filed July 27, 1973, Ser. No. 383,371
Int. Cl. A01d *49/00*
U.S. Cl. 56—504 **6 Claims**



1. A tractor secured ground clearing attachment comprising:

a supporting framework carried at a forward end of the tractor;

a forwardly open elongated housing mounted to the front of said framework and extending transversely across the width of the tractor with respect to a forward path of travel of the tractor;

elongated helical blade means rotatably mounted within the housing and extending transversely across the width of the tractor;

drive means on said framework operatively connected to the helical blade means for rotating the helical blade means at sufficient velocity to produce a transverse air current across the housing along the helical blade means;

a plurality of cutting elements including a first and second set thereof, said first set of cutting elements being mounted to the helical blade means and axially spaced thereon for movement therewith along rotational paths;

said second set of cutting elements being mounted to the frame adjacent the helical blade means and axially interspersed between the rotational paths of said first set of cutting elements, whereby debris engaged therewith is pulverized between the meshing teeth of the first and second sets;

said helical blade means being comprised of vanes extending radially outwardly from a central shaft, said vanes winding inwardly from the outer ends of the housing to

direct the air current and debris inwardly from the outer ends; and

exhaust means located between the ends of the housing for receiving the air current and debris and directing it to one side of the path of travel clear of the tractor.

3,862,540

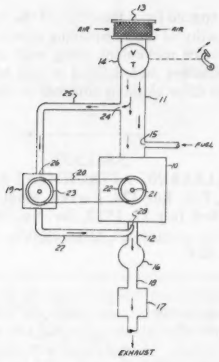
EXHAUST MANIFOLD AIR INJECTION SYSTEM

Bruce J. Harvey, Westland, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 221,576, Jan. 28, 1972. This application Feb. 22, 1974, Ser. No. 444,937

Int. Cl. F02b *75/10*

U.S. Cl. 60—290 **7 Claims**



1. In an internal combustion engine system having a primary engine assembly wherein a mixture of fuel and air are explosively ignited to produce a mechanical motion, a throttle controlled air intake manifold, a fuel delivery system delivering fuel to the engine assembly in proportion to the air mass being inhaled, and an exhaust system for directing the gases expelled from the engine assembly to the atmosphere, an improvement for injecting supplemental air into the exhaust system having a fixed ratio to the amount to the gases expelled by the engine thereby reducing the emission of undesirable exhaust gases into the atmosphere comprising:

an air pump;

driving means, interconnecting said pump with said engine, operative to drive said air pump at a speed proportional to the speed of said engine;

an enclosed input passage connecting said pump to the air intake manifold at a point therein downstream of the throttle and upstream of the fuel delivery system; and

an enclosed output passage connecting said pump to the engine's exhaust system, wherein the mass of the supplemental air being injected into the engine's exhaust system from said pump is proportional to the speed of the engine and the throttle controlled less than ambient air pressure in the intake manifold downstream of the throttle.

3,862,541

VARIABLE FILL FLUID COUPLING

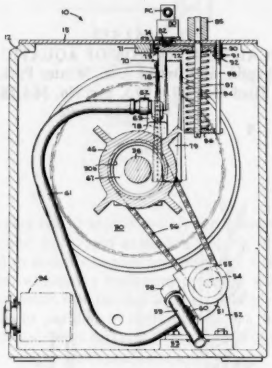
Philip R. Bunnelle, Santa Clara, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Jan. 23, 1974, Ser. No. 435,799

Int. Cl. F16d *33/10*

U.S. Cl. 60—358 **9 Claims**

1. In a variable fill type liquid coupling having a housing, a driving impeller rotatably mounted in said housing, a driven runner rotatably mounted within said housing in liquid coupling relation with said impeller, shroud means for forming an active liquid chamber between said runner and impeller, said shroud means being provided with a mouth for receiving charging liquid directed into said active liquid chamber, means for centrifugally bleeding said active liquid chamber, and a source of charging liquid within said housing, the improvement comprising orifice defining means located within said housing at a position adjacent the mouth of said active liquid chamber, means for directing charging liquid from said liquid source to said orifice defining means to produce a



flowing stream of liquid aligned to enter said mouth, a splitter arm pivotally mounted within said housing to swing in a plane that extends across the flowing stream between the orifice defining means and the active liquid chamber mouth for deflecting a portion of the flowing stream away from the mouth, and control means for pivoting the splitter arm to vary the quantity of liquid entering the mouth of the active liquid chamber.

3,862,542

HOT-GAS ENGINE BURNER-HEATER

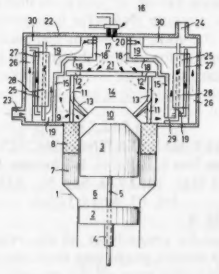
Albertus Peter Johannes Michels, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 25, 1973, Ser. No. 382,589

Claims priority, application Netherlands, Aug. 24, 1972, 7211530

Int. Cl. F02g *1/04*

U.S. Cl. 60—517 **3 Claims**



1. In a hot-gas engine including a burner device with a burner chamber bounded by a burner jacket, and having one inlet duct for combustion air, a second inlet for fuel, and an outlet for exhaust gas, a heater space receiving said exhaust gas and bounded by a heater jacket, a heater within said space and in the flow path of said exhaust gas, the burner jacket

having one side remote from the burner chamber and the heater jacket having one side remote from the heater space, which remote sides form part of the boundary of said inlet duct for combustion air, the improvement in combination therewith wherein the burner jacket and the heater jacket comprise heat-insulating partitions which thermally insulate the burner chamber and the heater space from the inlet duct for combustion air.

3,862,543

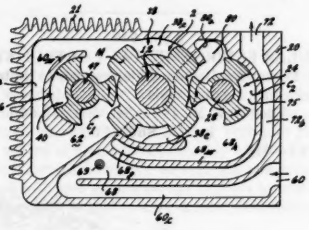
ENGINE POWERED FROM EXTERNAL ENERGY FORCE

Raymond G. Spinnett, 2531 S. Salta St., Santa Ana, Calif. 92704

Division of Ser. No. 281,645, Aug. 18, 1972,. This application June 4, 1973, Ser. No. 366,618

Int. Cl. F01k *25/02*

U.S. Cl. 60—530 **6 Claims**



1. An engine powered from an external energy source comprising:

a. a casing forming a sealed cavity and forming internally a central chamber and first and second peripheral chambers;

b. a central rotor in said central chamber and first and second peripheral rotors in said first and second peripheral chambers, each of said rotors having a hub with extending protrusions;

c. connection means for timing said central rotor in an interleaving relationship with said first and second peripheral rotors during the rotary cycle;

d. a high heat latency fluid for storage in said sealed cavity;

e. a heat-receiving chamber communicating with said central and said second peripheral chambers;

f. means for application of heat energy to said heat-receiving chamber;

g. means for heat removal from said first peripheral chamber.

3,862,544

LUBRICATING APPARATUS

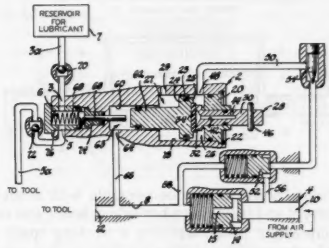
James J. Callahan, Mentor, and John Procter Snow, Macedonia, both of Ohio, assignors to McNeil Corporation, Akron, Ohio

Division of Ser. No. 60,411, Aug. 3, 1970, Pat. No. 3,393,757. This application Jan. 28, 1972, Ser. No. 221,577

Int. Cl. F01b *7/18, 31/10*

U.S. Cl. 60—546 **15 Claims**

1. Apparatus comprising: means defining a working chamber having a supply port for connection with a source of fluid pressure; means defining a pressure responsive wall for said working chamber operable to expand the working chamber from a contracted condition of minimum volume when the pressure in the working chamber is greater than a predetermined reference pressure, and to contract the chamber to said contracted condition when the pressure in said working chamber is less than said reference pressure; means for exerting a force against said wall substantially equal and opposite to that applied thereagainst in the working chamber at the reference pressure thereby to bias said wall to contract said chamber; a control plunger mounted in said working chamber, said control plunger being engageable with said movable wall when the working chamber is in the contracted condition and movable with said movable wall when the pressure in said working chamber is greater than the reference pressure until the volume of the working chamber exceeds a predetermined maximum; said control plunger having a vent port connecting said



working chamber with a pressure less than the reference pressure only when said control plunger is disengaged from said movable wall; a main passage for conducting fluid under pressure from said source to a fluid motor; a supply passage connecting said main passage with the supply port of said working chamber; and means operable to permit flow through said supply passage only in response to operation of said fluid motor and to continuously maintain said flow so long as said fluid motor is operated.

3,862,545

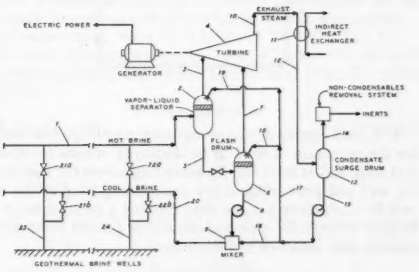
GEOTHERMAL BRINE ENERGY TO GENERATE POWER

John R. B. Ellis, Kentfield, and Arthur W. Pryor, El Cerrito, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 296,371, Oct. 24, 1972, abandoned. This application Apr. 25, 1974, Ser. No. 464,275

Int. Cl. F03g *7/04, 7/02*

U.S. Cl. 60—641 **9 Claims**



1. A process for using energy from hot brine to generate power, comprising:

1. flashing said hot brine in a flash zone to form steam and a concentrated brine;

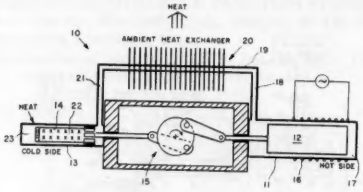
2. using said steam to drive a power-generating turbine;

3. condensing the exhaust steam from said turbine;

4. combining at least the major portion of the condensed turbine exhaust with said concentrated brine to form a restored brine having a composition approximating that of said hot brine; and

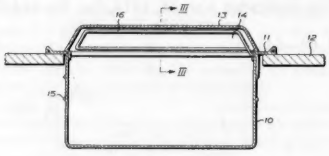
5. returning said restored brine to the source of said hot brine.

3,862,546
VUILLEUMIER REFRIGERATOR
Alexander Daniels, Briarcliff Manor, N.Y., assignor to North American Philips Corporation, New York, N.Y.
Filed June 19, 1972, Ser. No. 264,036
Int. Cl. F25b *9/00*
U.S. Cl. 62—6 **5 Claims**



1. A Vuilleumier refrigerator operable with a source of electric current and including a hot-side cylinder and reciprocating compression piston defining a working space and a quantity of compressible working gas therein, first means for introducing heat into said working space and gas therein comprising a semi-conductor, positive temperature coefficient material formed as wire and positioned in physical contact with said cylinder, said material having variable electrical resistance that increases by at least 10% per degree C in a selected temperature range, and second means for connecting said current source to said first means.

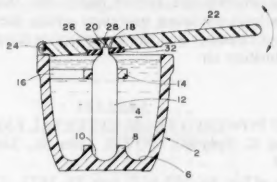
3,862,547
FOOD DISPLAY DEVICE
Nils Gosta Sigvard Ishammar, Manstigen 5, S 216 18 Malmo, Sweden
Filed Dec. 6, 1973, Ser. No. 422,110
Int. Cl. A47f *3/04*
U.S. Cl. 62—246 **1 Claim**



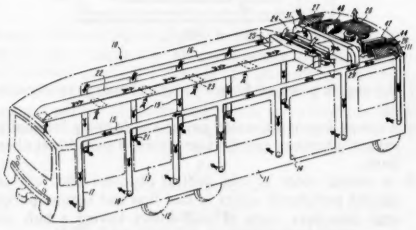
1. A food display device comprising: a well open at the top, for the reception of food to be displayed; means for cooling said well; and at least one fin extending across the opening of the well and protruding above the opening level of the well, said fin comprising a metal shell forming a cavity open at the bottom towards the well, and the device further comprising a coolant tube disposed in said cavity.

3,862,548
PORTABLE DEVICE FOR COOLING LIQUIDS
Shaul P. Ladany, Haela Street 6, Ramat Efal, Israel
Filed Nov. 1, 1973, Ser. No. 411,745
Int. Cl. F25d *3/10*
U.S. Cl. 62—294 **8 Claims**

1. A portable device for cooling liquids, comprising: a container for receiving the liquid to be cooled; means for supporting a compressed gas cartridge within the container in heat-conductive relationship to the liquid when received in the container, the cartridge having a gas outlet which is normally closed to hold the gas therein under compression; said supporting means comprising a ring for receiving the cartridge therein and an arm securing the ring centrally of the container for supporting the cartridge in a vertical portion centrally of the container; and a manipulatable member carrying an actuator element engageable with the gas outlet when the member is manipulated, to open the outlet and thereby to effect the cooling of the liquid within the container by the rapid expansion of the gas as it discharges from the cartridge.



3,862,549
MODULAR ENVIRONMENTAL CONTROL SYSTEM
Joseph F. Fernandes, Dayton, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio
Filed Nov. 29, 1972, Ser. No. 310,666
Int. Cl. B60h *3/00*
U.S. Cl. 62—419 **10 Claims**

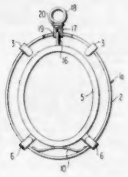


1. A modular environmental control system in a light weight rail vehicle or the like, said vehicle providing integrated delivery and return flow ducting systems for conditioned air, said ducting systems terminating at their one ends in a module receiving area conveniently accessible at a location above the vehicle floor, said area communicating with the vehicle exterior through openings providing for inflow and outflow of cooling ambient air, at least a portion of said control system being contained in a module installed in and removed from the module receiving area of the vehicle as a self-contained unit, said control system portion comprising refrigeration components including evaporator and condenser fan means to induce air movement through said module receiving area respectively by way of said delivery and return flow ducting systems and said exteriorly communicating openings, said refrigeration components further including evaporator and condenser means respectively and inherently positioned by the unitary installation of said module in said module receiving area to be in the path of flow of said induced air movements.

3,862,550
MOUNTING HAVING MOVABLY MOUNTED FLEXIBLE HOOK MEANS
Don F. Sengenberger, Rt. No. 3 Box 57, Zion, Ill. 60099
Filed Oct. 6, 1972, Ser. No. 295,551
Int. Cl. A44c *17/02*
U.S. Cl. 63—29 R **11 Claims**

1. A gemstone mounting comprising an annulus for supporting a gemstone, said annulus having an annular side wall defining an inner space, an upper edge, a lower edge, and at

least one aperture extending transversely through said annular side wall and spaced from said edges, means on the annulus for clasping the gemstone to said annulus, movably mounted flexible hook means for clasping the gemstone to said annulus, said hook means having a first portion extending through said aperture and into the inner space defined by said annular side wall and a second portion continuing from said first portion and extending outwardly from said annular side wall and

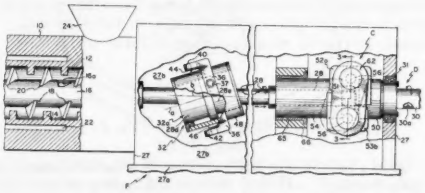


upwardly above said upper edge, and means situated within the inner space defined by said annular side wall and connected with said first portion of said hook means which extends through said aperture for moving both said portions of said hook means as a unit simultaneously both in a transverse and parallel direction relative to said annular side wall for cooperating with said means on the annulus to grip the gemstone and fasten it to and release it from said annulus.

3,862,551
DRIVE SHAFT CONSTRUCTION FOR MIXERS AND THE LIKE

Bernard A. Loomans, Saginaw, Mich., assignor to Baker Perkins, Inc., Saginaw, Mich.

Filed Sept. 12, 1973, Ser. No. 396,443
Int. Cl. F16d *3/54*
U.S. Cl. 64—19 **3 Claims**

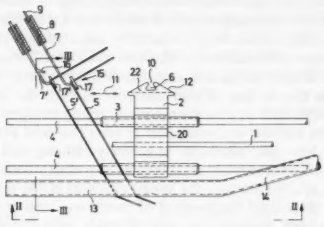


1. A rotary drive coupling for transmitting rotation between a pair of coaxially aligned shafts while one of said shafts is driven in axial reciprocation relative to the other between spaced end limits, said coupling comprising a pair of mounting means each adapted to be fixedly mounted upon the respective shafts, a pair of pivot means on each of said mounting means, the pivot means on each mounting means being located on opposite sides of and equally spaced from a first plane containing the common axis of said shafts and being equally spaced from a second plane containing the common axis of said shafts and perpendicular to said first plane, and a pair of rigid links, each link being pivotally coupled at one end to a pivot means on one mounting member and pivotally coupled at its opposite end to the pivot means of the other mounting member on the same side of said first plane as said one end of said link, said pivot means supporting said links for movement in general planes parallel to said first plane at opposite sides thereof.

3,862,552
WEFT ARRANGEMENT FOR WRAP KNITTING MACHINES

Gerhard Bergmann, Hausen, Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Germany

Filed Mar. 30, 1973, Ser. No. 346,558
Claims priority, application Germany, Mar. 30, 1972, 2215676
Int. Cl. D04b *23/06, 23/08, 23/10*
U.S. Cl. 66—84 A **6 Claims**



1. A weft laying arrangement for warp knitting machines having a predetermined weft thread path comprising;

a. a weft thread guide means,

b. transport means rigidly affixed to said guide means, said transportation means causing the guide means to move back and forth in said predetermined weft path,

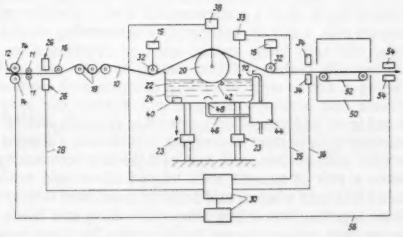
c. a plurality of weft thread laying means said laying means being located in predetermined positions in the machine relative to the weft thread path,

d. pattern controlled steering means for said laying means attached to each of said laying means for moving said laying means forwardly and rearwardly relative to said weft thread path.

3,862,553
APPARATUS FOR FINISHING CELLULOSE-CONTAINING TEXTILE MATERIALS

Martin Schwemmer; Hans Bors, and Albert Goetz, all of Zurich, Switzerland, assignors to Triatex International AG fur Textile Forschung und Entwicklung, Zurich, Switzerland

Division of Ser. No. 126,723, March 22, 1971, Pat. No. 3,811,834. This application Apr. 30, 1973, Ser. No. 355,337
Claims priority, application Switzerland, Mar. 26, 1970, 4659/70
Int. Cl. B05c *1/08*
U.S. Cl. 68—15 **11 Claims**

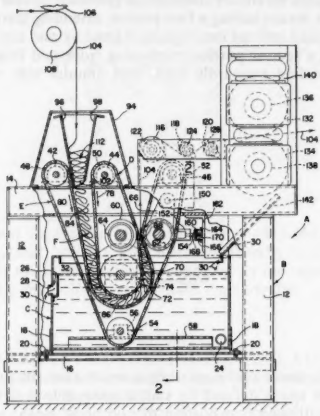


1. In an apparatus for continuously impregnating a sheet-like expandible porous textile web by applying thereto a controlled amount of a treatment bath which completely penetrates through the textile web and substantially drying the impregnated textile web, comprising textile web infeed means

for controlling the infeed of the textile web to be impregnated and dried and continuously moving in a predetermined direction of travel, at least one applicator device arranged downstream of the infeed means in the direction of travel of the textile web for applying a low-viscosity treatment bath having a viscosity below about 7 centipoise to the textile web at one face thereof for the substantially complete and uniform penetration of the applied treatment bath throughout said textile web, means located intermediate said web infeed means and said applicator device for engaging said material web and transversely expanding the same so as to deliver the material web essentially without creases and folds to said applicator device, said applicator device comprising at least one rotatable kiss roll having an axis of rotation, a vat for the treatment bath within which there is rotatably mounted said kiss roll with a portion of the surface of the kiss roll located above the level of the treatment bath in said vat, a doctor blade disposed to engage the surface of said kiss roll beneath the level of said treatment bath at a location counteracting the formation of air bubbles and the accumulation of fiber material at the surface of the kiss roll, means for selectively rotating said kiss roll in either of both rotational directions at a controllable rotational speed as a function of the speed of travel of the textile web in order to control the amount of treatment bath applied to the textile web, at least one pair of guide rolls for guiding said textile web over said kiss roll with a predetermined and controllable looping angle externally of the level of the treatment bath, each guide roll being arranged to one respective side of the axis of rotation of said kiss roll, at least one detector device for determining the weight per unit area including the liquid content of said textile web, control means operatively connected with said detector device and said kiss roll for regulating the rotational speed of the kiss roll as a function of the detected weight per unit area including the liquid content of said textile web ascertained by said detector device in order to ensure that the kiss roll applies a substantially constant amount of a non-squeezable excess of treatment bath to said textile web, dryer means arranged downstream of the kiss roll with respect to the direction of travel of the textile web for adjusting the damp textile web following contact with the kiss roll to a drying action sufficient to substantially dry the textile material to an extent so as to contain a residual moisture content which is less than 10 percent based upon the dry fabric weight.

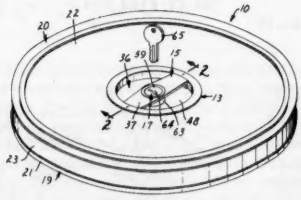
3,862,554
APPARATUS FOR WASHING FABRIC
Charles Harold Amidon, Jr., Holden, Mass., assignor to Gulf & Western Manufacturing Company, New York, N.Y.
Filed Aug. 24, 1973, Ser. No. 391,227
Int. Cl. B05c *3/134, 3/136, 3/138*
U.S. Cl. 68—22 R **10 Claims**

1. Apparatus for washing fabric comprising: a tank for holding liquid up to a predetermined level, a plurality of belt support rolls, a pair of continuous belts extending around said rolls, said belts being spaced-apart on opposite sides of a substantially U-shaped fabric conveying path, said path including a downwardly extending entrance path portion, an arcuate path portion within said tank beneath said predetermined level, and an upwardly extending exit path portion, said entrance path portion converging in a direction toward said arcuate path portion, said exit path portion terminating between a pair of squeeze rolls located above said predetermined level and whereat said belts are positioned substantially closer together than at any other place along said fabric conveying path, delivery means for delivering flat fabric between said belts in said entrance path portion as a folded and overlapped fabric pack, said fabric pack being squeezed and washed in said tank in said arcuate path portion, said fabric pack being squeezed between said squeeze rolls to force washing liquid therethrough and therefrom, and exit squeezer means for pulling said fabric pack back into a continuous flat web, said delivery and exit squeezer means being driven at substantially the same speed, and said belts being driven at a speed substantially slower than said delivery and exit squeezer



means whereby said fabric pack travels through said tank at a much slower velocity than said flat fabric moves through said delivery means and said exit squeezer means.

3,862,555
LOCKING REEL CONTAINER
Wayne M. Wirth, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Apr. 2, 1973, Ser. No. 347,188
Int. Cl. E05b *65/52;* **B65d** *85/67*
U.S. Cl. 70—63 **3 Claims**



1. In a reel storage container having separable mated portions forming a centrally located hub having an axis and a chamber around the hub adapted to receive a reel and latch means coaxially centered within the hub for releasably coupling the portions including a socket in one portion having an inwardly projecting annular ring, a resilient cup supported on the other portion and positioned within the socket when the portions are mated, and a latch member mounted within the cup for movement from a latching to a releasing position, said cup and latch member having members in engagement to expand the cup within the socket and retain the container portions in the closed position when the latch member is in the latching position, and out of engagement to afford separation of the container portions when the latching member is in the releasing position, the improvement wherein:

said container includes a key-operated pin-tumbler lock mechanism including:

a plug mounted in the latch member for rotation about said axis via said key between locked and unlocked positions;

a pair of locking members mounted on the latch member for pivotal movement about axes parallel to the axis of the plug in opposed directions between engaged and separated positions;

cam means engaged between said plug and said locking members for correspondingly moving the locking members between their engaged and separated positions upon rotation of the plug between the locked and unlocked positions; and

a pin fixed to the base coaxially with said hub and having a projecting end adapted for engaging from opposite sides by the locking member when said container portions are mated and said locking members are moved to their engaged position, the locking members when in their separated position being spaced and out of engagement with said pin to afford axial movement of the pin therebetween and separation of the container portions.

3,862,556

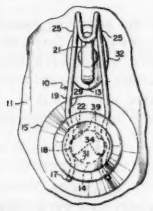
DOOR LOCK ATTACHMENT

Adolph Moses, 8 E. 83rd St., New York, N.Y. 10028

Filed Oct. 2, 1973, Ser. No. 402,681

Int. Cl. E05b *13/00*

U.S. Cl. 70—416 **12 Claims**



1. A snap on and off attachment for optionally restraining rotation of the thumb knob of a lock having a door knob comprising:

a bracket having at one end means to optionally embrace the thumb knob consisting of a pair of siamese inverted substantially V-shaped hooks straddling the thumb knob axis to restrain the rotation relative to the bracket; and

at the opposite end means for demountably embracing the door knob hub consisting of a pair of spring legs so as to anchor the bracket against rotation about the thumb knob axis.

3,862,557

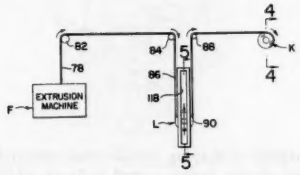
APPARATUS AND METHOD FOR HYDROSTATIC EXTRUSION

Alexander Zeitlin, 18 Macy Ave., White Plains, N.Y. 10605

Division of Ser. No. 224,210, Feb. 7, 1972,. This application Aug. 27, 1973, Ser. No. 391,746

Int. Cl. B21c *31/00*

U.S. Cl. 72—9 **10 Claims**



1. Apparatus for cold extruding metal into a fine wire comprising: an extrusion die, hydraulic pressure means for forcing said metal through said die to form a fine wire, looping means for tensioning and forming a loop in said wire, said looping means including signal generating means responsive to change in length of said loop and the rate of said change, and loop tensioning means responsive to said signal generating means for applying a higher tensioning force to said loop in response to decrease in the length of said loop, and applying a lower tensioning force to said loop in response to increase in the length of said loop.

3,862,558

STRIP REDUCTION MEASUREMENT DEVICE AND CONTROL SYSTEM USING THE SAME FOR ROLLING MILL

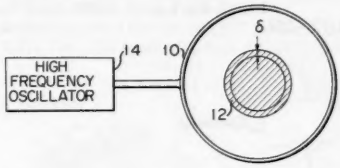
Yutaka Yoshitani, Tokyo, and Yoshiharu Hamazaki, Amagasaki, both of Japan, assignors to Nippon Steel Corporation and Mitsubishi Denki KAbushiki Kaisha, both of Tokyo, Japan

Filed Dec. 27, 1972, Ser. No. 318,770

Claims priority, application Japan, Dec. 30, 1971, 47-2372

Int. Cl. B21b *37/00*

U.S. Cl. 72—11 **8 Claims**



1. A device for measuring the reduction of the cross-sectional area of a workpiece effected by a rolling mill, comprising: a rolling stand, a pair of electromagnetic coils disposed on the oncoming and outgoing sides of the rolling stand respectively and receptive therethrough of an electrically conductive workpiece rolled by the rolling stand during use and passing through the electromagnetic coils to change the inductances thereof as a function of the cross sectional area, detector means for detecting the deviation in inductance of each of the electromagnetic coils due to the passing of the workpiece therethrough and means for developing a signal determinative of the reduction of the cross-sectional area of the workpiece effected by the rolling stand solely as a function of the inductance deviations of the electromagnetic coils.

3,862,559

METHOD AND DEVICE FOR MAKING CONVEYOR BELTS

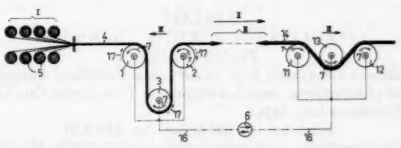
Heinz Richter, Ahlem; Walter Kase; Hans-Hermann Kolle, both of Hannover, and Johann Rothen, Rossing, all of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Filed Feb. 13, 1973, Ser. No. 332,159

Claims priority, application Germany, Feb. 14, 1972, 2206831

Int. Cl. B21b *39/08*

U.S. Cl. 72—205 **1 Claim**



1. In combination with a device for making conveyor belts with reinforcing inserts of strands of wire, including an inlet range and an outlet range, first friction roller means arranged at said inlet range, second friction roller means arranged at said outlet range, means for synchronously driving said first and second friction roller means for conveying the reinforcing inserts from said inlet range to said outlet range while subject-

ing said reinforcing inserts to pull stresses, means for exerting the improvement therewith which comprises directly upon said first friction roller means a torque always entirely effective in a direction opposite to the direction in which said pull stresses act, and being operable to drive said friction roller means at said inlet range with a torque overcoming the total resistance encountered by the reinforcing inserts during their movement from said inlet range to said outlet range.

3,862,560

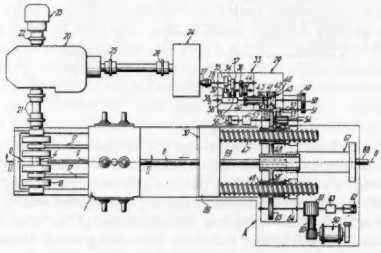
FEED APPARATUS OF TUBE COLD ROLLING MILL

Mark Izrailevich Grinshpun, ulitsa Pushkina, 4, kv. 21, Elektrostal Moskovskoi Oblasti; Igor Iosifovich Dobkin, ulitsa Zhukovskogo, 8, kv. 25, Krasnogorsk Moskovskoi Oblasti; Gennady Fedorovich Kurenkov, prospekt Lenina, 30/13, kv. 6, Elektrostal Moskovskoi Oblasti, and Alexandr Vasilievich Bushev, ulitsa Mayakorskogo, 3, kv. 66, Khimki Moskovskoi Oblasti, all of U.S.S.R.

Filed Feb. 5, 1974, Ser. No. 439,829

Int. Cl. B21b *21/04, 39/06*

U.S. Cl. 72—252 **2 Claims**



1. A feed apparatus for feeding a tube being rolled into the deformation zone of a tube cold rolling mill with a reciprocating roll stand operated from a drive, comprising: means for conversion of a uniform rotational motion into intermittent forward movement and having an input shaft to which the uniform rotational motion is transmitted by a drive kinematically connected to said drive of the roll stand so that said input shaft makes one revolution during the time in the course of which said roll stand makes one double stroke, and an output member having an intermittent forward motion constant in magnitude and independent of a load applied thereon in the direction of said deformation zone at the end of the backward, to the direction of rolling, travel of said roll stand; a feed device coupled with said output member and being imparted said intermittent forward motion therefrom, said device having means to feed the tube being rolled into the deformation zone; a hydraulic cylinder connected to a fluid delivery source to transmit fluid pressure into said feed device in the direction of said deformation zone and hence to decrease load on the parts of said conversion means at the moment of feed of the tube being rolled.

3,862,561

APPARATUS FOR FORMING THORN-LIKE PROJECTIONS

Yoshitaka Uebayashi; Koji Tashiro, and Toshifumi Anayama, all of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima-ken, Japan

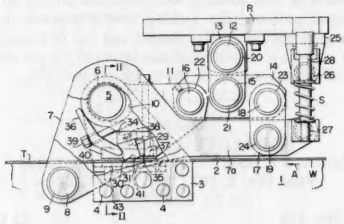
Filed Apr. 9, 1974, Ser. No. 459,330

Claims priority, application Japan, Apr. 10, 1973, 48-40581

Int. Cl. B21d *31/02*

U.S. Cl. 72—325 **8 Claims**

1. An apparatus for forming thorn-like projections on a surfact of a workpiece, said apparatus comprising a stationary frame having a work supporting platform, first swingable arm means having one end pivotably supported on said frame, said first arm means having surface means confronting to said platform, second swingable arm means pivotably supported on said frame and having biting cutter means provided on lower side thereof, means for biasing said second arm means upwardly with respect to said first arm means, vertically movable actuating means disposed above said first and second arm means, and linkage means for transferring downward movement of the actuating means to said first and second arm



means whereby when the actuating means is moved downwardly the surface means of the first arm means is brought into holding engagement with a workpiece on said platform and thereafter upon further downward movement of the actuating means said second arm means is swung to bring the biting cutter means into biting engagement with the workpiece.

3,862,562

METHOD OF SHAPING DUCTILE SHEET MATERIAL AND APPARATUS THEREFOR

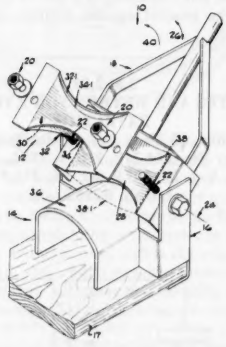
Johannes Petrus Kruger, 59 Graaff-Reinet St., Nigel, South Africa

Filed May 21, 1973, Ser. No. 362,001

Claims priority, application South Africa, June 5, 1972, 72/3808

Int. Cl. B21d *5/02*

U.S. Cl. 72—380 **11 Claims**

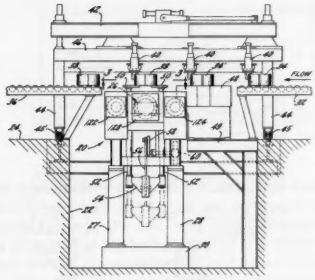


1. A method of shaping ductile sheet material to three-dimensional shapes having curved surfaces, which includes the steps of shaping a first portion of such sheet material to have a curved surface and of thereafter bending and shaping a further portion of the material to have a further curved surface intersecting the first curved surface such that the bend takes place along a bend zone in which the curved surfaces meet, the radii of curvature of the surfaces being equal to each other in bend zone.

3,862,563
TRUCK RIM FORMING APPARATUS

Vernon Fencl, Northbrook; Hans R. Luedi, Highland Park; Christian H. Stettler, and Alberts Roze, both of Chicago, all of Ill., assignors to Grotnes Machine Works, Inc., Chicago, Ill.

Filed Nov. 12, 1973, Ser. No. 414,721
Int. Cl. B21d *53/26*
U.S. Cl. 72—403 **10 Claims**

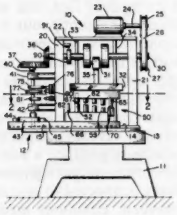


1. Apparatus for preparing partially formed cylindrical metal shells moved along a flow path for welding their end gaps comprising, in combination, a frame, a workpiece operating station within the frame, horn means carrying first and second dies on opposite sides thereof disposed in said operating station, first ram means including a forming die disposed adjacent to said first horn die, power means for moving said first ram means toward the horn to form said shell ends adjacent the gap against said first die when said shell is surrounding the horn in the operating station, second ram means carrying a closure die disposed adjacent said second horn die, power means for moving said second ram means toward the horn to compress the opposite side of said shell against said second die and close the end gap, and lifter means for moving a shell workpiece from the flow path into the operating station surrounding said horn and removing it therefrom.

3,862,564
MACHINE PRESS WITH POSITIVE CAM DRIVEN SLIDING BED AND CAM ACTIVATED AUXILIARY SYSTEMS

Robert Blase, 1009 Round Hill Rd., Fairfield, Conn. 06430

Continuation-in-part of Ser. No. 301,165, Oct. 26, 1972, abandoned. This application Nov. 20, 1973, Ser. No. 417,579
Int. Cl. B21j *13/08*
U.S. Cl. 72—405 **14 Claims**

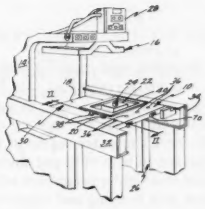


1. A machine press comprising:
A. a base and supports upstanding therefrom;
B. a first motor-driven upper shaft rotatably mounted in the supports upstanding from the base;
C. a ram mounted for sliding movement perpendicular to the base;
D. connecting means for driving the ram from the first upper shaft;
E. a bed mounted for sliding movement on the base, said sliding movement being perpendicular to the movement of the ram;
F. a second shaft driven by the first shaft;
G. A first cam mounted on said second shaft adjacent to the bed;
H. cam followers upstanding from the bed and engaged by the first cam, wherein rotation of the second shaft and the first cam mounted thereon causes sliding movement of the bed.

3,862,565
PRESSURE PIN CAPTURING SYSTEM FOR TRAVELING BOLSTERS

Henry Smit, Kentwood, Mich., assignor to Leslie E. Tassell, Grand Rapids, Mich., a part interest

Continuation-in-part of Ser. No. 263,147, June 15, 1972, Pat. No. 3,818,748. This application Sept. 10, 1973, Ser. No. 396,011
Int. Cl. B21j *13/00*
U.S. Cl. 72—448 **22 Claims**



1. In a power press apparatus of the type including an upper movable ram, a lower press bed, means for reciprocating said ram toward and away from said bed; a traveling bolster assembly for supporting and transporting a drawing die in repeated production usage; said apparatus including a bolster means movable between at least a loading position in which said bolster means and a drawing die supported thereby are displaced from alignment with said ram and wherein materials to be worked can be positioned with respect to said bolster means, and a working position in which said bolster means and supported drawing die are aligned with said ram and said material can be worked; said bolster means including pressure pin means and said press bed including die cushion means; said die cushion means biasing said pin means in a first direction generally toward said ram such that material to be worked is engaged by said pin means during the working of such material by said ram; the improvement comprising: restraining means on said bolster means for preventing said pressure pin means from reciprocating with respect to said bolster means at all times except when said bolster means is in said working position; said restraining means being mounted for movement in a second direction generally transverse to said first direction.

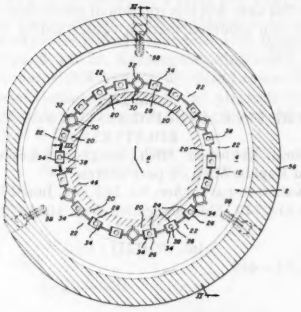
3,862,566
CARBIDE DIE WITH MULTIPLE INSERTS

William H. Phillips, Jr., North Bergen, N.J., assignor to Carmet Company, Pittsburgh, Pa.

Filed Aug. 13, 1973, Ser. No. 387,990
Int. Cl. B21c *3/06*
U.S. Cl. 72—468 **11 Claims**

3. A die assembly comprising an outer ring having an axial opening therethrough, an enlarged diameter portion in said

opening providing a cylindrical recess, a plurality of inner and outer segments in said cylindrical recess, each of said inner segments being arranged in matching set relationship with an outer segment, a bushing having an inner diameter less than the smallest diameter of said opening, said bushing being received within said axial opening, the combined radial thickness of matching inner and outer segments being less than the



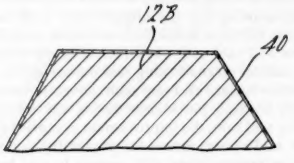
radial distance between said bushing and said cylindrical recess, at least one wedge receiving slot being provided in each matching set of inner and outer segments, a wedge in each of said slots, and means for moving said wedges in an axial direction to force the outer segments into tight engagement with the surface of said enlarged diameter portion and the inner segments into tight engagement with said bushing so as to firmly secure said bushing and outer ring together.

3,862,567

TOOTH FORMING TOOL

Richard S. Hildreth, Milan, Italy, assignor to Ex-Cell-O Corporation, Highland Park, Mich.

Filed Aug. 29, 1973, Ser. No. 392,650
Int. Cl. B21h 5/02
U.S. Cl. 72—469 **18 Claims**



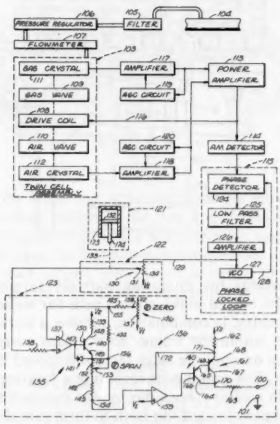
1. A tool for pressure forming teeth on the periphery of a cylindrical workpiece, said tool including a body formed of tool steel and having a leading end and a trailing end and being provided with a working face having a plurality of teeth thereon, a first section of said teeth being disposed between said leading end and said trailing end, each of said teeth in said first section having a configuration conjugate to the configuration of the teeth to be formed on the workpiece and having a pitch line, second and third sections of teeth being disposed between said first section of teeth and said leading end, the tops of the teeth in said second and third sections sloping toward said leading end, the tip, flank and root surfaces of said second section of teeth only being plated.

3,862,568

METHOD OF AND APPARATUS FOR PRODUCING FLUID GRAVITY AND DENSITY ANALOGS AND FLOWMETERS INCORPORATING GRAVITOMETERS

Gerald Lance Schlatter, and Charles Eveleigh Miller, both of Boulder, Colo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 22, 1972, Ser. No. 265,327
Int. Cl. G01n 9/34
U.S. Cl. 73—32 A **44 Claims**

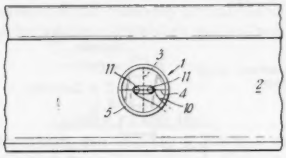


1. A gravitometer comprising: a body having first and second chambers therein to contain air and a gas of interest, respectively; first and second spring metal ferromagnetic cantilevered vanes mounted in said first and second chambers, respectively, each vane having one end fixed relative to said body and a free end opposite thereof for immersion in said air and gas, respectively, said first vane free end being positioned to vibrate back and forth in a first pair of predetermined opposite directions in said first chamber without touching said body, said second vane free end being positioned to vibrate back and forth in a second pair of predetermined opposite directions in said second chamber without touching said body, said first pair of directions being approximately parallel to the direction in which the thicknesses of both of said first and second vanes are measured, said second pair of directions being approximately parallel to the direction in which the second vane thickness is measured; driver coil means fixed relative to said body in a position to attract said vane free ends when said coil is energized; first and second piezoelectric crystals fixed relative to and contiguous to the said one end of said first and second vanes, respectively; amplifier means connected from both of said crystals to said driver coil means to impress an output signal on said driver coil means to cause said first and second vanes to vibrate continuously at respective frequencies equal to the frequencies of the output signals of said first and second crystals, respectively, said amplifier means including means to produce a sum signal directly proportional to the sum of the output signals of said crystals, said amplifier means being connected to said driver coil to impress said sum signal thereon; computer means connected from both of said crystals to produce an output signal responsive to the outputs of said crystals which is directly proportional to I_o, where dI_o/dG equals a constant and $G = \rho_g/\rho_a$, where ρ_g is the density of said gas, and ρ_a is the density of said air; and utilization means connected from said computer means to receive said output signal thereof.

3,862,569
MEASUREMENT OF THE CHANGE IN LONGITUDINAL FORCE IN A RAIL

John C. Lucas, and George W. Morland, both of c/o British Railways Board, 222 Marylebone Rd., London, England

Filed Apr. 16, 1973, Ser. No. 351,388
Int. Cl. G01b 7/16
U.S. Cl. 73—88.5 R 3 Claims

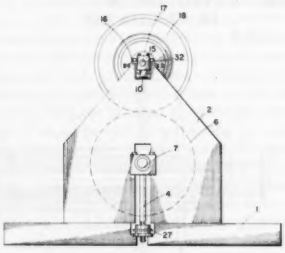


1. The combination of a rail having a hole therein and a gauge set in said hole in the rail for measuring changes in longitudinal force in the rail, said gauge comprising a ring which is a close fit in the hole in the rail and which is secured to the rail around the periphery of said hole, a first wire extending across the hole in the longitudinal direction of the rail and secured at its opposing ends to said ring, a second wire extending across the hole at right angles to said first wire and secured at its opposing ends to said ring in spaced relation to said first wire, the rail, ring, and each of said first and second wires all having substantially the same coefficient of thermal expansion, means for setting said first and second wires into vibration, means for detecting the vibration frequencies of said first and second wires, the means for setting said first and second wires into vibration comprising a respective electromagnetic coil for each wire, the means for detecting the vibration frequencies of each of said first and second wires also comprising its respective electromagnetic coil, said gauge including supporting means extending across said ring in a plane transverse to the axis of said ring, and pole pieces for said electromagnetic coils secured to said supporting means.

3,862,570
TIRE SYMMETRY MEASURING METHOD AND SYSTEM

Theodore Ongaro, Columbus, Ohio, assignor to Ongaro Dynamics, Inc., Columbus, Ohio

Filed Jan. 26, 1973, Ser. No. 326,592
Int. Cl. G01m 17/02, 1/16
U.S. Cl. 73—146 16 Claims



1. Apparatus for simultaneously testing the symmetry and the non-uniformity characteristics of a vehicle wheel/tire under simulated actual static load and at speeds characteristic of 60–90 m.p.h., comprising:

a frame member,

a first shaft member mounted in said frame for rotation therein,

a drum mounted on said first shaft,

a second shaft member mounted in said frame, said second shaft adapted to support said wheel/tire in a perpendicular plane and parallel to said drum and in contact with said drum,

means for varying the amount of contact between said wheel/tire and said drum to thereby simulate the actual static load necessary for said tire and thereby simulate the tire patch,

said wheel shaft and said drum shaft in said frame having a fixed parallel dimension once said varying means is in a fixed position to provide a closed loop system,

means for rotating said drum at peripheral velocities comparable to auto speeds of 60–90 m.p.h.,

a first piezoelectric sensor positioned in a first direction relative to said first shaft to sense and measure the radial forces at said tire patch of said tire under said simulated actual load and said speed of a vehicle,

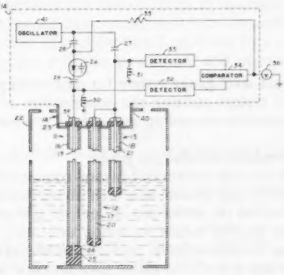
a second piezoelectric sensor positioned in a second direction at right angles to said first direction and at 90° displacement from said first sensor — to sense and measure the dynamic unbalance forces caused by lack of symmetry of said tire simultaneously with said first sensor,

and means for utilizing said first and second sensed measurements.

3,862,571
MULTIELECTRODE CAPACITIVE LIQUID LEVEL SENSING SYSTEM

Ronald F. Vogel, Bettendorf, Iowa, assignor to Agridustrial Electronics, Inc., Bettendorf, Iowa

Filed Aug. 6, 1973, Ser. No. 385,831
Int. Cl. G01f 23/26
U.S. Cl. 73—304 C 3 Claims



1. A system for measuring level of a liquid comprising:

a probe assembly having at least two elongated capacitive probes of uniform cross section, each of said probes having at least two electrodes with space therebetween to be filled with liquid as a dielectric to the same height as the height of the surface of the surrounding liquid, said probe assembly adapted to hold said probes vertically beside each other in a container for liquid, the lower ends of said probes extending to different predetermined depths, the increased capacitances of said probes caused by presence of liquid being different while the level of liquid in said container is intermediate the upper and lower ends of all of said probes,

an electrical circuit including a voltage source and having first and second branches, each connected to an output circuit, said first branch connected to one probe having the longer length, and the second branch connected to at least one of the other of said probes, impedance means in each of said branches connected to said probes effective to balance out the effect of the capacitances of said

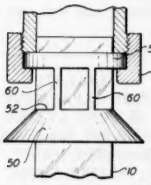
probes while liquid is not present thereabout, and said electrical circuit operative to provide in said output circuit a difference signal indicative of the ratio of the increased capacitance of that portion of said probe assembly connected in said first branch resulting from presence of liquid to the increased capacitance of that portion of said probe assembly connected in said second branch resulting from presence of liquid.

3,862,572

GAUGE GLASS PROTECTING MEANS

Orlin R. Norris, 263 Little Street, Belleville, N.J. 07109

Filed Sept. 20, 1973, Ser. No. 399,018
Int. Cl. G01f *23/02*
U.S. Cl. 73—328 **4 Claims**



1. A liquid level gauge system for determining the level of liquid in a system utilizing the combination of liquids and gases at pressures exceeding atmospheric pressure, comprising:

a. a transparent tubular gas gauge;

b. a first tubular connecting means connected at one end thereof to said system, at a level above the normal liquid level and at the other end thereof, to said gauge glass;

c. a first sealing means including at least a first gasket means, to substantially prevent the leakage of gas between one end of said gauge glass and said first connecting means;

d. a second tubular connecting means connected at one end thereof to the pressure system at a level below the normal liquid level and at the other end thereof to the other end of said gauge glass;

e. a second sealing means to substantially prevent the leakage of liquid between the other end of said gauge glass and said second connecting means;

f. a frustro conical deflector means having an axial opening about its axis of rotation, the cross section of said opening being substantially equal to but not exceeding in shape and area that of the outer cross section of the gauge glass, said deflector means being located upon the gauge glass in such a manner that the gauge glass passes through axial opening in the deflector means; and,

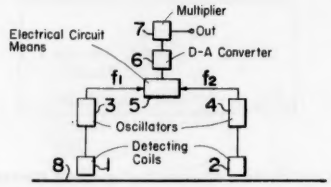
g. at least one strip means for intregally connecting said first gasket means to said deflector means, wherein said deflector means is supported by said gasket means, but separated by a predetermined distance therefrom when said gasket means is in position as part of said first sealing means.

3,862,573

METHOD AND APPARATUS FOR MEASURING TEMPERATURE DIFFERENCE AT SPACED POINTS ON METAL SURFACES

Toshihiro Mori; Takeo Yamada, both of Yokohama, and Katsujiro Watanabe, Tokyo, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1972, Ser. No. 307,806
Claims priority, application Japan, Nov. 29, 1971, 46-96185
Int. Cl. G01k *7/02*
U.S. Cl. 73—342 **12 Claims**



1. Apparatus for measuring the temperature difference of the surface of a metal body comprising:

a pair of oscillators including detecting coils, said detecting coils being spaced apart with a predetermined spacing along said surface of the metal body and disposed close to but not touching said surface, said coils having a characteristic which varies with temperature changes in the surface of the metal body disposed close thereto, and the respective output signals of said oscillators having frequencies (f_1/f_2) which are a function of said temperature variable characteristic of said detecting coils;

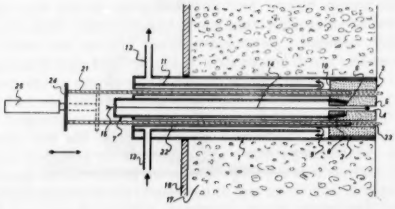
electrical circuit means for producing a signal corresponding to the complement ($1-f_1/f_2$) of the ratio (f_1/f_2) of the frequencies of the output signals of said oscillators; and a multiplier coupled to said electrical circuit means for multiplying the complement signal by a constant, thereby generating an output signal which is a function of said temperature difference.

3,862,574

ADJUSTING THE TEMPERATURE OF A RADIATION FURNACE

Jacques Antoine, Longeville-les-Metz, and Jean-Jacques Mathieu, Saint Julien-les-Metz, both of France, assignors to Institut de Recherches de la Siderurgie Francaise, Saint-Germain-en-Laye, France

Filed Feb. 28, 1973, Ser. No. 336,874
Claims priority, application France, Mar. 6, 1972, 72.07638; Mar. 16, 1972, 72.09168
Int. Cl. G01k *1/08*
U.S. Cl. 73—343 R **6 Claims**



1. In a device for measuring the temperature of a furnace, wherein said device is of the type having an outer sheath, a thermally conductive element fixedly mounted in one end of the sheath and having a surface facing out of the sheath for

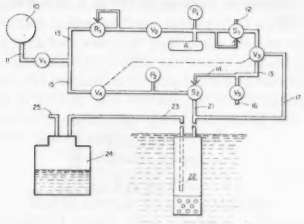
exposure to radiation within the furnace, means for determining temperature positioned within said thermally conductive element, and means in said sheath for cooling said thermally conductive element; the improvement wherein said thermally conductive element is a refractory material mounted in a fixed position in said sheath, and further comprising elongated means extending through said sheath and said conductive element and longitudinally movable therein with respect to the sheath and thermally conductive element between a position fully within the sheath and a position extending outwardly beyond said surface of said thermally conductive element for dislodging the incrustations formed on said surface.

3,862,575

LIQUID SAMPLING

Richard R. Thompson, and Malcolm F. Irwin, both of West Chester, Pa., assignors to Pro-Tech Inc., Malvern, Pa.

Filed Nov. 2, 1973, Ser. No. 412,278
Int. Cl. G01b *1/14*
U.S. Cl. 73—421 B **9 Claims**



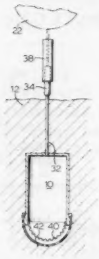
1. In liquid-sampling apparatus operable from a source of propellant fluid under pressure to collect samples of liquid from a body thereof, the improvement comprising a first conduit and a second conduit for connection in parallel to the source of pressurized fluid, and a pressure regulator in the first conduit to reduce the pressure therein below that in the second conduit; in sequence in the first conduit downstream from the regulator, a flow-regulating valve, an accumulator tank, a first pressure-responsive switching valve, and a two-position outlet valve; the switching valve being interconnected to sense the pressure of fluid accumulated immediately upstream therefrom, being normally closed below a given accumulated pressure and venting the conduit downstream therefrom, and being adapted to open and stop venting at a given higher accumulated pressure; and, in sequence in the second conduit, an on-off valve ganged to the two-position outlet valve in the first conduit, and a second pressure-responsive switching valve interconnected to sense the pressure between the two-position outlet valve and the second flow-regulating valve, the latter valve being normally closed to the body of liquid and adapted to open at a given pressure and to reclose at a given lower pressure therebetween; the ganging of the on-off valve in the second conduit with the two-position outlet valve in the first conduit being such that the latter valve in the closed or off position of the on-off valve is open downstream to the body of liquid to be sampled, and in the open or on position of the on-off valve is open instead to a second flow-regulating valve to the atmosphere.

3,862,576

GEOCHEMICAL EXPLORATION METHOD

Louis August Pogorski, 660 Eglinton Ave., West, Toronto, Ontario, Canada

Filed May 22, 1972, Ser. No. 255,505
Int. Cl. G01v *9/00*
U.S. Cl. 73—432 R **6 Claims**



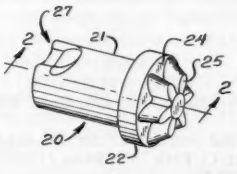
1. A method of geochemical prospecting by locating areas of anomalously high concentration of indicator constituent in the subsurface environment in which said concentration of indicator constituent is determined by presenting a pocket of known gas, entrapped in an open-bottomed, close-topped canister, having its open bottom in permeable or semi-permeable communication only with the subsurface environment so as to allow, and for sufficient time to allow, the indicator constituents in the subsurface soil to transfer to the gas pocket in the canister under the influence of its partial pressure gradient and thereafter analyzing the gas in said gas pocket to determine the concentration of indicator constituent, in which the indicator constituent is helium, and in which said open bottom of said canister is enclosed by a membrane permeable to the indicator constituent and impermeable to liquids.

3,862,577

SCREW JACK PINION GEAR AND METHOD OF MAKING SAME

Richard S. Graafsma, Benton Harbor, Mich., and George H. Morgan, South Bend, Ind., assignors to Auto Specialties Manufacturing Company, St. Joseph, Mich.

Filed Aug. 15, 1973, Ser. No. 388,391
Int. Cl. F16h *55/00*
U.S. Cl. 74—432 **6 Claims**



1. A pinion gear for use with a screw jack or the like, the pinion gear comprising a shank, an upset, faced collar at one end of the shank, a plurality of side gear teeth on the collar face; and a tool accommodating skirt back-extruded on the opposite end of the shank.

3,862,578
DEVICE FOR TESTING AND REPEAT CHECKING OF PRESSURE CONTAINERS

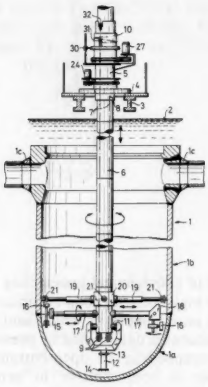
Heinz Schluter, Nurnberg, Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft Werk Nurnberg, Nurnberg, Germany

Filed Oct. 25, 1972, Ser. No. 300,665

Claims priority, application Germany, Oct. 29, 1971, 2154015

Int. Cl. G21c *17/00*

U.S. Cl. 73—432 R **23 Claims**



1. In combination with a device for conducting tests on the inside of a pressure container having an axis and open at one axial end and closed at the other axial end; a post arranged coaxially with said container, bridge means supporting said post and including means for moving said post on the axis of the container and means for rotating said post, adjustable centering means engaging said post and engageable with the wall of said container to support the post in the radial direction, first support means on one end of said post pivotal thereon about an axis perpendicular to the axis of the post and adapted for supporting first testing means to test the closed axial end of said container, and second support means in the form of a beam extending through said post near said one end thereof in a direction perpendicular to the axis of the post, said beam being expansible and contractable in the radial direction of the post and being rotatable in said post about an axis perpendicular to said axis of the post, said beam having means at the ends for further supporting second test means for testing the longitudinal wall of said container, and means for controlling from the bridge the adjustment of said centering means and the pivotal movement of said first support means and the expansion and contraction and the rotation of said beam for positioning of the test means thereon.

3,862,579
PEDAL MECHANISM

Howard Rudy Roberts, Box 895, Hope, British Columbia, Canada

Filed Nov. 5, 1973, Ser. No. 412,954

Int. Cl. F16h *7/00*; **B62m** *11/00*, *1/08*

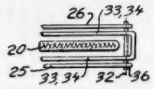
U.S. Cl. 74—89.2 **10 Claims**

1. A pedal mechanism for converting reciprocating motion of pedals to rotary motion of a power shaft, the mechanism including:

i. left-hand and right-hand spaced circular driving members journalled for rotation about aligned driving member axes fixed relative to a frame, the members having peripheral engaging means disposed in spaced parallel diametrical planes,

ii. left-hand and right-hand arms, each arm having: a respective pedal; a respective outer end; a respective inner end journalled for rotation relative to the frame about an arm axis disposed parallel to the driving member axes; and a respective anchoring means adjacent the respective outer end thereof, each anchoring means describing a stroke when the particular arm swings through an arc centred on the arm axis; the strokes of the anchoring means of the left-hand and right-hand arms being within planes coplanar with the diametrical planes of the left-hand and right-hand circular driving members respectively, the strokes of the anchoring means having inner and outer ends, the driving members being positioned adjacent the inner ends of the respective strokes,

iii. first and second idler means journalled for rotation within planes normal to the diametrical planes of the circular driving members, each idler means having transversely disposed peripheral engaging means, portions of which are tangentially aligned with the peripheral engaging means of the right-hand and left-hand driving members respectively, the first idler means being positioned adjacent an inner end of the stroke of the anchoring means and the second idler means being positioned adjacent an outer end of the stroke of the anchoring means, the idler means being positioned relative to each other to ensure adequate link wrap around the driving members so as to eliminate slippage between a link and the driving member,

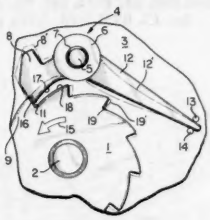


iv. a flexible tension link cooperating with the left-hand anchoring means and passing around the left-hand driving member to the first idler means; thence around the right-hand driving member to the right-hand anchoring means; thence around the second idler means to the left-hand anchoring means so as to form a loop of link coupling both anchoring means and wrapped around both driving members, so that when the right hand arm swings through an arc so that the right hand anchoring means moves from the inner end to the outer end of the stroke to produce a power stroke of a right hand portion of the link, tangential force is applied to the right hand driving member from the link to rotate that driving member in a forward direction, the left-hand driving member rotating in a backward direction in response to movement of a left-hand portion of the link, which movement causes the left-hand anchoring means to move through a return stroke, thus swinging the left hand arm through an arc towards the left-hand driving member,

v. a power shaft journalled for rotation about a power shaft axis, the power shaft axis being fixed relative to the frame and aligned with the driving member axes,

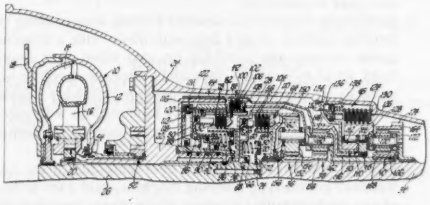
vi. ratchet means cooperating with each respective driving member and the power shaft so that alternate rotation in the forward direction of each driving member resulting from consecutive power strokes of each arm produces essentially continuous rotation of the power shaft in the forward direction, the ratchet means permitting rotation in a backward direction of a driving member prior to a power stroke.

3,862,580
PLASTIC PAWL WITH INTEGRAL PAWL SPRING
Eduard J. Pulles, Huntsville, Ala., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Nov. 2, 1973, Ser. No. 412,232
Int. Cl. F16d *41/12*
U.S. Cl. 74—577 S **2 Claims**



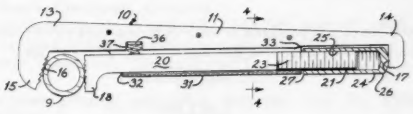
1. A unitary pawl for use with a ratchet wheel in which said pawl comprises: a hub-like section adapted to pivot upon a shaft spaced from a ratchet wheel; a substantially rigid first portion extending outwardly from said hublike section in a first direction and adapted to be in contact with a ratchet wheel; means for limiting the movement of said pawl whereby said first portion is spaced from said ratchet wheel to reduce the contact area between said pawl and a ratchet wheel when said pawl is in a biased position relative to said ratchet wheel; a flexible second portion extending from said hub-like section in a second direction, said second portion including integral resilient means for storing energy and releasing said energy to bias said pawl against said ratchet wheel.

3,862,581
FOUR SPEED TRANSMISSION
John J. O'Malley, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 4, 1974, Ser. No. 439,273
Int. Cl. F16h *57/10, 47/00*
U.S. Cl. 74—759 **4 Claims**



1. A power transmission having forward and reverse drives comprising; an input shaft; an output shaft; first, second, and third simple planetary gear sets, each having a plurality of members, said first and third planetary gear sets each having first members connected to said output shaft; first clutch for selectively connecting said input shaft to a second member of said first planetary gear set; second clutch means for selectively connecting first and second members of said second planetary gear set together, third clutch means for selectively connecting the second member of said second planetary gear set to said input shaft and cooperating with said second clutch means for connecting said second planetary gear set to rotate in unison with said input shaft; first brake means cooperating with said second clutch means for preventing rotation of said second planetary gear set; second brake means for selectively preventing rotation of a second member of said third planetary gear set; first one way means for providing a drive connection between the first member of said second planetary gear set and the second member of said third planetary gear set in one direction second one way means for grounding said second member of said third planetary gear set in the opposite direction; and means connecting said first and second planetary gear sets and said second and third planetary gear sets; said first clutch means and said first and second one way means being operable to provide a first forward ratio, said first and second clutch means and said second one way means being operable to provide a second forward ratio with said second member of said third planetary gear set being a stationary reaction member.

3,862,582
PIPE WRENCH
Raymond B. Nockleby, Rt. 1, Kalispell, Mont. 59901
Filed Apr. 22, 1974, Ser. No. 462,963
Int. Cl. B25b *13/16*
U.S. Cl. 81—168 **3 Claims**

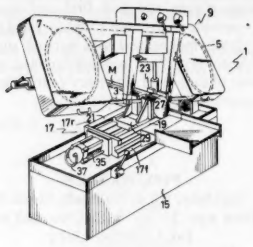


1. A pipe wrench comprising:
an elongated handle extending longitudinally from an outer end to an inner end, said inner end having a first jaw thereon projecting angularly therefrom and facing said outer handle end;
a second jaw facing the first jaw and having an elongated shank protruding outwardly therefrom to an outer threaded shank end;
a recessed longitudinal channel on said handle intermediate its outer and inner ends, slidably receiving the elongated shank to define a path of movement of the second jaw longitudinally along the handle relative to the first jaw;
said channel being recessed in a configuration complementary in cross section to the cross section of said shank;
an abutment surface on said outer handle end projecting angularly therefrom and facing said first jaw;
an adjusting nut threadably engaging the threaded end of said shank and extending therefrom outwardly toward said abutment surface for operative engagement therewith to limit outward movement of the second jaw relative to the first jaw;
wherein said adjusting nut may be turned about the axis of said threaded shank end to selectively adjust the distance between said first and second jaws; and
a spring within said channel between said shank and handle to normally urge said shank and handle relatively apart within the confines of said channel.

3,862,583
BANDSAW MACHINES PROVIDED WITH AN IMPROVED MATERIAL HOLDING VISE
Jiro Tsuchiya, 5-1-16, Tsurukawa, Machida, Tokyo, Japan
Filed May 16, 1973, Ser. No. 360,760
Claims priority, application Japan, May 19, 1972, 47-57802
Int. Cl. B23d *55/04*
U.S. Cl. 83—796 **2 Claims**

1. A bandsaw machine comprising a fixed vise jaw which is fixed to a bed, a movable vise jaw which is movable to approach or withdraw from the fixed vise jaw on the bed, said fixed vise jaw defining a vertically elongate opening in the vicinity of the center thereof, said movable vise jaw defining a vertically elongate opening in the vicinity of the center thereof, said fixed vise jaw and movable vise jaw being constructed and arranged so that said opening in the movable vise jaw aligns with the opening in the fixed vise jaw to provide an

elongate passageway between the fixed vise jaw and movable vise jaw, and a bandsaw blade which is movable vertically into



and out of said passageway while cutting a work piece retained between said fixed vise jaw and said movable vise jaw.

3,862,584

FIRE RANGING METHOD FOR LAUNCHERS OF SELF-PROPELLED MISSILES

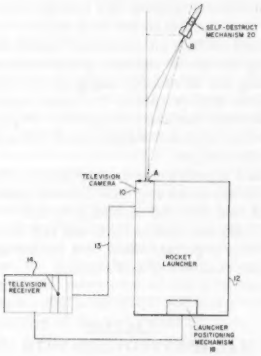
Hermann Karl Schmidt, Six Fours, and Jean Michel Tauzin, Paris, both of France, assignors to Constructions Navales et Industrielles de la Mediterranee C.N.I.M., Paris, France

Filed Apr. 5, 1973, Ser. No. 348,001

Claims priority, application France, Apr. 19, 1972, 72.13720

Int. Cl. F41g *3/02*

U.S. Cl. 89—1.8 **10 Claims**



1. A fire ranging method for launchers of self-propelled missiles comprising the step of firing a missile from a launcher, measuring the angular deviation between the theoretical trajectory of the missile and the actual location of the missile at the point where combustion of the missile propulsive charge ceases, moving the launcher in a direction opposite to the angular deviation at a predetermined proportional amplitude to that of the measured deviation, the predetermined proportion being a function of the particular missile being launched.

3,862,585

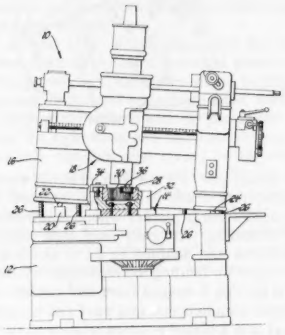
METHOD OF MANUFACTURING TAPERED INVOLUTE SPLINES

Kenneth B. Harmon, Indianapolis; George L. Bowers, Mooresville, and William G. Livezey, Indianapolis, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 157,195, June 28, 1971, abandoned. This application Dec. 18, 1972, Ser. No. 315,805

Int. Cl. B23f *5/16*, *5/20*

U.S. Cl. 90—2 **3 Claims**



1. A method of manufacturing tapered involute splines on an internally tapered hub workpiece and on an externally tapered shaft workpiece for assuring a substantially perfectly matching interfit, said method comprising the following steps:

a. mounting the generating head of a standard gear shaper on the base thereof at an angle conforming to the taper of said hub workpiece;

b. securing said hub workpiece on the work support table on said gear shaper base;

c. generating longitudinal involute formed spaces along the internal surface of said hub workpiece with a standard cutter reciprocally mounted on said tilted gear shaper head, so as to produce oppositely disposed involute wall surfaces at all points along the progressively varying circumference of said internally tapered hub workpiece;

d. removing the finished hub from said work support table;

e. shaping a cam surface along a cam template for use on a standard crown-type hobbing machine, said cam surface at any predetermined number of selectively spaced points therealong being reflective of the width of said spaces of said finished hub intermediate said oppositely disposed involute wall surfaces thereof at said predetermined number of corresponding selectively spaced points along the length of said finished hub;

f. securing said shaft workpiece on a rotatable table of said hobbing machine;

g. mounting said cam template on said hobbing machine with said predetermined cam surface synchronized with the axial location of the tapered portion of said shaft workpiece;

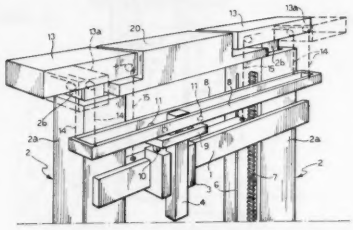
h. generating the involute profiles of the external teeth on said tapered portion of said shaft workpiece with a standard hob rotatably mounted on said hobbing machine and following said cam surface, so as to produce teeth with oppositely disposed involute wall surfaces identical to said involute wall surfaces formed on said hub workpiece; and

i. removing the finished shaft from said rotatable table.

3,862,586
GANTRY TYPE LARGE MACHINE TOOL

Maso Galbarini, Pavia, and Francesco Cotta Ramusino, Milan, both of Italy, assignors to Innocenti Santeustacchio S.p.A., Brescia, Italy

Filed Sept. 24, 1973, Ser. No. 399,936
Claims priority, application Italy, Dec. 12, 1972, 32762/72
Int. Cl. B23b *1/00*
U.S. Cl. 90—11 F **12 Claims**



1. In a gantry type machine tool structure of the type having:

at least one upright,

at least one substantially horizontal beam being supported by and vertically movable on said upright,

a carriage movable along said substantially horizontal beam,

a headstock being carried by said movable carriage,

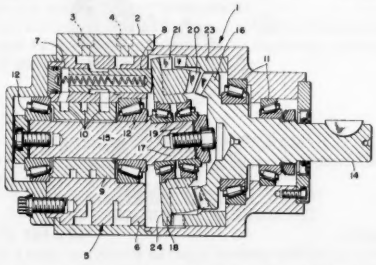
the improvement wherein:

said at least one upright is formed in first and second substantially parallel structurally independent vertical, supports said first support of said upright having vertical guide means and means for positioning the vertical height of said substantially horizontal beam, and means associated with said second support for transferring substantially all the weight of said substantially horizontal beam and the carriage and head stock carried thereon to said second support of said upright whereby said first support is not subject to deformation due to lateral positioning of said carriage.

3,862,587
HYDRAULIC MOTOR

Theodore S. Zajac, and Hal E. George, both of Rocky River, Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Sept. 24, 1973, Ser. No. 399,855
Int. Cl. F01b *3/10*
U.S. Cl. 91—477 **10 Claims**

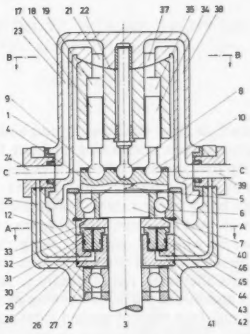


1. A hydraulic motor comprising a stationary housing having coaxial high speed and output shafts journaled therewithin; said high speed shaft having a bent axis portion; a hydraulically actuated nutating member within said housing and axially retained and journaled on the bent axis portion of said high speed shaft to cause rotation of the latter and consequent nutation of said nutating member; said nutating member having coaxial bevel gear means which during nutation thereof progressively mesh with bevel gear means fixed in said housing and on said output shaft; the progressively meshing gear means on said nutating member and on said output shaft having at least a one tooth difference to effect low speed-high torque driving of the latter by nutation of said nutating member; said nutating member being hydraulically actuated by a circular array of axially movable pistons in said housing engaged with an inclined end face of said nutating member; and said high speed shaft having an axially outer end portion extending coaxially within said circular array of pistons.

3,862,588
METHOD OF OPERATING AN AXIAL PISTON MACHINE HAVING A HYDROSTATIC BEARING LOAD RELIEF DEVICE

Willy Bahrle, Neu-Ulm/Donau, and Dieter Weigle, Ulm/Donau, both of Germany, assignors to The Firm of Constantin Rauch, Ulm/Donau, Germany

Continuation-in-part of Ser. No. 243,798, April 13, 1972, abandoned, which is a continuation of Ser. No. 56,864, July 21, 1970, abandoned. This application Dec. 17, 1973, Ser. No. 425,455
Claims priority, application Germany, July 31, 1969, 1939084
Int. Cl. F01b *13/04*
U.S. Cl. 91—486 **2 Claims**



1. In a method of operating an axial piston machine including a housing, an odd number of parallel spaced pistons, a rotating drive plate against which said pistons act, a rotating shaft extending from said drive plate, said rotating shaft being supported within the housing by a radial bearing assembly and a combined axial and radial thrust angular contact bearing assembly, said last-named bearing assembly having an optimal pressure cone angle designed into it at the time of manufacture, the method including the known simultaneous steps of (a) reciprocating the odd number of parallel spaced pistons by the shaft-driven rotating drive plate arranged obliquely with respect to the axes of said pistons, the reciprocation developing varying combined radial and axial forces which are applied to said drive plate, (b) drawing liquid by said pistons through the suction side of said machine and expelling it through the pressure side thereof, (c) transmitting to one side of the combined axial and radial thrust angular contact bearing assembly adjacent to said drive plate and surrounding said shaft, the varying combined radial and axial forces of said pistons, the improvement comprising the step of applying to the other side of said bearing and at said pressure side of the machine an axial counterforce of such a magnitude that the angle formed by the resultant of the radial and axial forces created by said pistons and said counterforce and exerted on said combined axial and radial thrust angular contact bearing assembly with

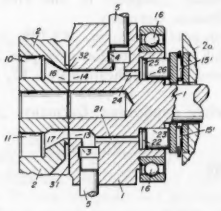
the axis of said combined axial and radial thrust angular contact bearing assembly is never greater than the optimal pressure cone angle of said bearing assembly.

3,862,589

PRESSURE APPLYING ARRANGEMENT FOR A MULTIPLE FLOW MACHINE

Karl Eickmann, 2420 Isshiki Hayama-machi, Kanagawa-ken, Japan

Filed Mar. 24, 1972, Ser. No. 237,617
Claims priority, application Austria, Apr. 7, 1971, 2986/71
Int. Cl. F04b *1/24, 13/06*
U.S. Cl. 91—487 2 Claims



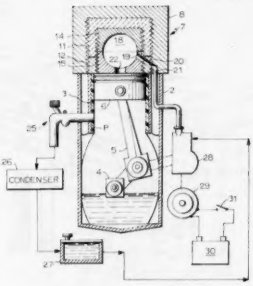
1. In a multiple flow machine, in combination, a pressure applying arrangement comprising at least first and second bodies having first and second end faces abutting each other, said first body being a rotor rotatable about an axis, and said second body being non-rotatable, said first body having two spaced sets of working chambers and two sets of rotor passages connected with said sets of working chambers, respectively, and opening on said first end face in rotor ports spaced from said axis the same radial distance; said second body having inlet and outlet passages opening in control ports on said second end face thereof spaced from said axis the same radial distance as said rotor ports so that during rotation of said first body said rotor ports communicate through said control ports with said inlet and outlet passages; said second body being mounted for limited axial movement relative to said first body and having cylindrical portions; and control means for pressing said second body with the end face thereof against the end face of said first body, said control means including a stationary housing portion having inlet and outlet means, and pressure chambers communicating with said inlet and outlet means and having cylindrical inner surfaces, said cylindrical portions of said second body slidingly and sealingly fitting into associated pressure chambers so that the pressure in said pressure chambers presses said second body with said second end face thereof against said first end face of said first body, at least one of said pressure chambers and associated cylindrical portions of said second body being centric to said axis, and at least one other of said pressure chambers and cylindrical portions of said second body being eccentric to said axis, said second body having in said second end face, a central end bore, arcuate inlet control ports and outlet control ports, and an endless uninterrupted face portion surrounding said inlet control ports and outlet control ports, and extending between said central bore and the radially outer end of said second end face, the cross sectional effective area of each of said pressure chambers being larger than the corresponding effective pressure area along one of said ports and said end face.

3,862,590

EXPANSION ENGINE AND INJECTION-CHAMBER HEAD

Hermann Mengeler, Meerbusch 3, 4005 Am Langenbruchbach 5, Germany

Continuation-in-part of Ser. No. 385,467, Aug. 3, 1973,. This application Oct. 24, 1973, Ser. No. 409,290
Int. Cl. F01b *31/08;* F16j *11/02*
U.S. Cl. 92—163 5 Claims



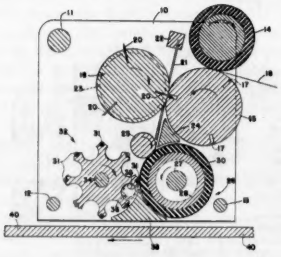
1. An injection-chamber head for reciprocating-piston engines including
a cylinder head,
an insulator bore in said cylinder head,
a non-metallic thermal insulator in said cylinder head and having
a chamber bore therein,
a first chamber element having
a chamber recess therein,
a second chamber element having
a chamber recess and
a gas port therein,
said non-metallic insulator and one of said chamber elements each having an injection port therein, said ports being aligned when assembled, and an injection bore in said head and in communication with said aligned injection ports when assembled.

3,862,591

METHOD AND APPARATUS FOR FORMING HOLLOW PAPER STICKS

Edward D. Cottrell, Cataraugus, N.Y., assignor to Champion International Corporation, New York, N.Y.

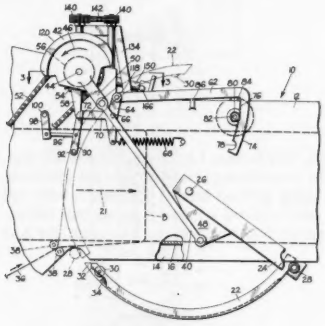
Filed Jan. 7, 1974, Ser. No. 431,056
Int. Cl. B31c *5/00*
U.S. Cl. 93—94 R 10 Claims



1. A device for producing hollow rod-like articles by forming tightly convoluting sections of a flexible sheet comprising: a cutoff means for providing sheets of predetermined length; burnishing means for compacting one surface of each sheet to produce a curl therein, said burnishing means including a driver roller for receiving and propelling each sheet through

a curling position, and a smooth burnishing cylinder positioned in resilient contact with the sheet as it is driven through the curling position for forming a convolute hollow rod-like article.

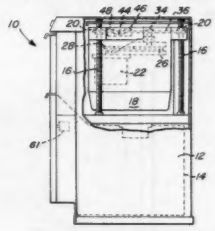
3,862,592
BALE FORMING AND TYING MECHANISM
Percy F. Freeman, 2034 N.W. 27th Ave., Portland, Oreg.
Filed Apr. 30, 1973, Ser. No. 355,645
Int. Cl. B65b *13/28*
U.S. Cl. 100—4 **6 Claims**



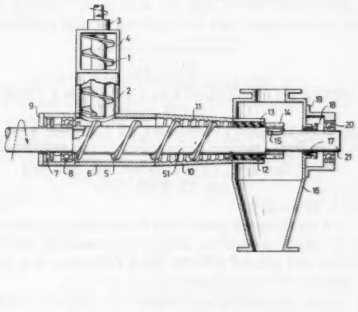
1. A bale forming and tying mechanism comprising
a. a frame,
b. a baling chamber on said frame with a material receiving entrance and a reciprocating piston for compacting bales in end to end relation and forcing them through the baling chamber,
c. a supply source of bale tying wire,
d. a wire carrying needle on said frame,
e. power driven means on said frame causing the needle to move up and down at intervals through the baling chamber,
f. wire tying means on said frame,
g. said needle being arranged to carry wire upwardly for placing it in said wire tying means and having an upward movement above said baling chamber sufficient to leave a loop of wire above the baling chamber of a total length equivalent to substantially the length of a bale,
h. and control means for controlling the operation of said power driven means for the needle,
i. said control means comprising a movable linkage engageable by the wire and releasable by tightening movement of the wire after the loop is depleted.

3,862,593
COMPACTOR DRIVE SYSTEM
Einar O. Engebretsen, Troy, Ohio, assignor to Hobart Corporation, Troy, Ohio
Filed June 18, 1973, Ser. No. 371,177
Int. Cl. B30b *1/18, 15/14*
U.S. Cl. 100—53 **6 Claims**

1. In a trash compactor having a housing with an open trash receptacle, a reciprocable compacting ram movable into and out of said receptacle, and a reversible electric motor for driving said ram; the improvement comprising
a driving connection between said motor and said ram including a yieldable force transmitting member connecting said motor to said ram and constructed and arranged to permit said motor to commence rotation before exerting a moving effort against said ram at least in the direction of retracting said ram from said receptacle after compacting trash therein.

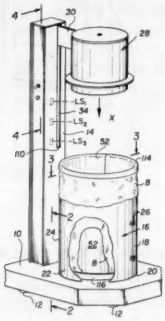


3,862,594
CONVEYING APPARATUS
Klaus Stolting; Hans-Georg Zimmermann, both of Wiesbaden-Biebrich, and Ewald Klos, Taunusstein, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
Filed Dec. 29, 1972, Ser. No. 319,166
Claims priority, application Germany, Nov. 17, 1972, 2256409
Int. Cl. B30b *11/24*
U.S. Cl. 100—95 **8 Claims**



1. Apparatus for conveying a moist, crumbly material, which comprises a screw conveyor, a housing enclosing said screw conveyor, and a stripping means, said housing having a cylindrical feed section, a cylindrical end section and, between said feed and end sections, a compression section, said screw conveyor and said housing being cylindrical in said feed section whereby the cross-sectional area between said screw conveyor and said housing is substantially constant, at least one of said screw conveyor and said housing in said compression section being conically shaped whereby the cross-sectional area between said screw conveyor and said housing decreases in the direction of conveyance, said housing being internally screw-threaded with a pitch smaller than and in a sense opposite to that of the screw-threading of said screw conveyor, the core of the screw conveyor being screwless in said end section whereby an annular plug of material can be formed therein, and said stripping means being mounted at the outlet of said end section of said housing.

3,862,595
MOVABLE VERTICAL COMPACTOR
Joseph F. Longo, Wilton, Conn., assignor to International Dynetics Corporation, South Norwalk, Conn.
Filed Mar. 29, 1972, Ser. No. 239,191
Int. Cl. B30b *1/18, 15/14*
U.S. Cl. 100—100 **7 Claims**



1. A refuse compactor comprising a base adapted to receive a container for refuse, a vertical column rising above said base, a carriage mounted within said column to be freely movable therein, an arm extending outward of said column cantilevered above said base from said carriage, a ram mounted at the end of said arm in line with said container, an elongated jack screw rotatably mounted on said base and extending vertically within said column, interconnecting said jack screw and said carriage comprising a ball threaded about said jack screw and a socket assembly slidably mounted about said ball and secured to said carriage, providing a universal joint permitting said carriage to move vertically on rotation of said jack screw and to move angularly relative to the axis of the jack screw and means for selectively rotating said jack screw to move said ram into and out of said container.

3,862,596
PRESS WITH ADJUSTABLE PLATEN LATCHING MECHANISM
Ladislao (Wladyslaw) Putkowski, 21 Limarick Ave., Weston; Ontario, Canada
Filed Aug. 22, 1973, Ser. No. 390,564
Int. Cl. B30b *7/04*
U.S. Cl. 100—219 **27 Claims**

1. In a machine for generating forces along a predetermined path for application to an object, said machine including:

a. first and second platens, each extending in a plane perpendicular to said path,

b. means supporting said platens in opposed relation with said first platen movable towards and away from said second platen along said path,

c. said platens including opposed force receiving means for receiving reaction forces produced as a result of application of generated forces to said object,

d. a pair of opposed elongated tie bars, and means for connecting said tie bars firmly to said second platen, said tie bars each having a set of teeth,

an improved motive and latching means for moving said first platen and for locking said first platen to said tie bars, comprising:

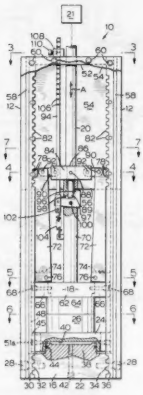
e. a pair of support bars, one associated with each tie bar and each having teeth engageable with the teeth of its asociated tie bar,

f. means connecting said support bars to said first platen for movement between a disengaged position in which said teeth of said support bars are disengaged from said teeth of said tie bars and an engaged position in which said teeth of said support bars are engaged with said teeth of said tie bars,

g. an actuating member mounted for movement along said path towards and away from said first platen, and motive means for moving said actuating member along said path,

h. linking means interconnecting said actuating member, said support bars and said first platen for moving said first platen towards said second platen during movement of said actuating member towards said second platen,

i. adjustable blocking means connected to said linking means for stopping said first platen in a first selected position during such movement of said first platen towards said second platen,



j. said linking means including means for permitting continued movement of said actuating member, after said first platen has reached said first selected position, to a second selected position relative to said first selected location,

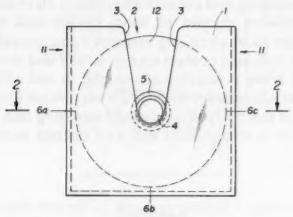
k. said linking mens further including means responsive to said continued movement for moving said support bars from their disengaged to their engaged position,

l. said linking means also including means responsive to movement of said actuating member from said second selected position in a direction away from said second platen for moving said support bars from their engaged to their disengaged position and for then moving said first platen away from said second platen.

3,862,597
CASING FOR INKING ROLLERS
Alfred Martin, Zurich, Switzerland, assignor to Franz Buettner AG, Egg, near Zurich, Switzerland
Filed Jan. 9, 1973, Ser. No. 322,167
Claims priority, application Germany, Jan. 10, 1972, 2200996
Int. Cl. B41f *31/02*
U.S. Cl. 101—367 **1 Claim**

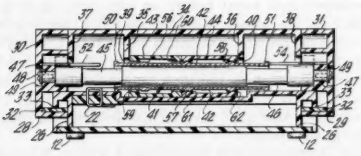
1. An inking roller device comprising a central roller core having conical end surfaces coaxial with said core, an ink roller mounted on said core, and a casing having a pair of flexible, spaced apart side walls and an open top to which said side walls extend, said roller and said core fitting into said casing through said open top, each of said flexible side walls having an aperture extending from the edge thereof adjacent said open top to terminate in a centrally located apex in the respective side wall, wherein the apertures of the two side walls are defined by aperture edges aligned with each other, a reinforced bearing shell around the apex of each aperture, each bearing shell having a conical surface directed inwardly into said casing and merging into the respective aperture

edges, said conical surfaces of the bearing shells being shaped and spaced to releasably receive the conical end surfaces of said core which is fitted between said conical surfaces of said bearing shells so that the conical end surfaces of said core engage the conical surfaces of said bearing shells with a snap



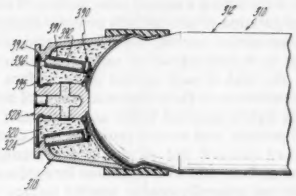
fit due to said flexible side walls, the conical end surfaces of said core providing the only supporting surfaces of said core, whereby the conical surfaces on said bearing shells support said core within said casing in such a position that contact between said ink roller and the walls of said casing is prevented.

3,862,598
PRINTING DEVICE
Nathaniel F. Hawthorne, Watertown, Mass., assignor to Bartizan Corporation, New York, N.Y.
Filed July 16, 1973, Ser. No. 379,442
Int. Cl. B41f *3/04*
U.S. Cl. 101—269 **5 Claims**



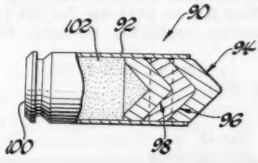
1. A printing device for the embossed printing on form sets of credit card data and merchant identification data and the like found on a plurality of cards or plates including a base having a plurality of recesses for holding credit cards and plates, a platen carriage mounted for reciprocal movement on said base over said recesses, a shaft supported by said carriage and movable therewith over said recesses, an axially movable sleeve mounted on said shaft, a pair of roller platens rotatably mounted on said sleeve for movement over said recesses in operative printing positions and in idle position, axially spaced cooperating support means formed externally on the said sleeve and internally on said roller platens, said axially spaced support means being alternately engageable and disengageable for supporting one of said platens in an engaged operative printing position while the other of said platens is in an idle position during reciprocal movement of said carriage, and cam means engageable with said axially movable sleeve for shifting said sleeve in an axial direction and placing one of said roller platens in an operative position and the other in an inoperative position.

3,862,599
CASED CARTRIDGE
Charles R. Olsen, West Chester, Pa., assignor to Colt Industries, Operating Corp., Hartford, Conn.
Filed Oct. 19, 1972, Ser. No. 299,003
Int. Cl. F42b *9/02*
U.S. Cl. 102—38 **7 Claims**



1. A cased cartridge for firing as an integral unit from a breech of a firearm barrel comprising a projectile, a propellant container carried on a rear portion of said projectile, said propellant container having an annular side wall and an end wall on a breech end of said projectile, said side and end walls being formed of imperforate form sustaining noncombustible material jointly defining and normally sealing an enclosed propellant containing compartment, said projectile having a tapered rear side wall configuration providing a tapered boat-tail on the rear of said projectile, an obturator band mounted in surrounding relation to said tapered boat-tail of said projectile to effect obturation of propellant gases upon being driven up the projectile boat-tail by the gaseous products of combustion, and a combustilble propellant received within said compartment, said propellant container being deformable such that pressure build-up to a predetermined level within said compartment upon ignition of said propellant causes controlled rupture of the enclosed sealed compartment and effects substantially instantaneous exhaust of products of combustion for launching said cartridge in its entirety from the firearm barrel.

3,862,600
MULTI-PROJECTILE ASSEMBLY
Charles Thomas Tocco, Space 35, 21908 Degundre, Warren, Mich. 48091
Continuation of Ser. No. 116,877, Feb. 19, 1971, abandoned.
This application May 30, 1973, Ser. No. 365,162
Int. Cl. F42b *5/02, 11/10*
U.S. Cl. 102—38 **10 Claims**



1. A multi-projectile assembly for use in a firearm having a barrel with rifling formed therein, comprising a casing having a tubular wall portion with an exit end forwardly thereof, a first non-jacketed lead projectile received in said casing so as to be situated generally forwardly, said first projectile including a first body having a first outer surface of continuous circular configuration of substantially constant diameter when viewed in cross-section normal to the axis of said tubular wall portion so as to thereby cause full surface-to-surface contact as between the lead of said first outer surface and said tubular wall portion over the entire axial length of said first outer surface received within and in contact with said tubular wall portion, said first projectile also comprising a first formed

forward end surface and a first formed rearward end surface, said first formed forward end surface defining a first generally convex surface for enhancing the passage of said first projectile through the air, said first formed rearward end surface defining a first generally concave tapered surface, a second non-jacketed lead projectile received in said casing so as to be situated rearwardly of said first projectile in abutting but not cemented relationship thereto, said second projectile including a second body having a second outer surface of continuous circular configuration of substantially constant diameter when viewed in cross-section normal to the axis of said tubular wall portion so as to thereby cause full surface-to-surface contact as between the lead of said second outer surface and said tubular wall portion over the entire axial length of said second outer surface tightly received within and in contact with said tubular wall portion, said second projectile also comprising a second formed forward end surface and a second formed rearward end surface, said second formed forward end surface defining a second generally convex tapered surface extending totally transversely across said second body as to taperingly meet said second outer surface, said second formed rearward end surface defining a second generally concave tapered surface, said first and second projectiles being so situated within said tubular wall portion as to have said first concave surface in abutting relationship to said second convex surface, each of said concave and said second convex surfaces being of a generally conical configuration complementary to each other and providing for mating engagement with each other when said first and second projectiles are situated in said tubular wall portion, propellant means carried by said casing rearwardly of said second projectile, said propellant means being effective upon release of its energy to propel said first and second projectiles out of said exit end of said casing in tandem abutting fashion maintaining the full surface of said first concave surface in abutting relationship with said second convex surface during the full length of travel of said projectiles through said barrel of said firearm and with said first and second outer surfaces being effective for engaging and having the rifling of said firearm pass through the lead comprising said outer surfaces and partly through said first and second bodies, and an annular peripheral groove conjointly formed by said first formed rearward end and said second formed forward end for causing a degree of air turbulence and thereby affecting axial separation of said first and second projectiles only after said projectiles have exited the end of said firearm barrel.

3,862,601

SAFETY DEVICE FOR EXPLOSIVE PROJECTILES

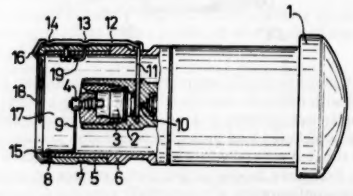
Max Rentzsch, Furth, and Gunther Hofmann, Nurnberg, both of Germany, assignors to DIEHL, Nurnberg, Germany

Filed Jan. 30, 1973, Ser. No. 328,126

Claims priority, application Germany, Feb. 2, 1972, 2204822

Int. Cl. F42b *15/10*

U.S. Cl. 102—49.3 **4 Claims**



1. In a projectile adapted to be introduced into the barrel of a weapon and having a propellant charge and a delayed-action fuse means for igniting an explosive charge, a transfer element movable by explosion of said propellant charge upon ignition to initiate operation of said fuse means, a safety pin in said projectile blocking movement of said transfer element by said explosion of said propellant charge and withdrawable for releasing said element, an electrically operable igniter energizable for igniting said propellant charge, a pair of contact members on the outer side of said projectile connected to energizing contacts of said igniter, and an electrically conductive short circuiting element lying along the outer side of said projectile engaging said contact members in electrically interengaging relation thereto to short circuit said energizing contacts, said short circuiting element being movable out of engagement with said contact members, and said short circuiting element being connected at one end to said safety pin so as to serve as a handle for the withdrawal thereof from locking position, said short circuiting element engaging said projectile to maintain it in engagement with said contact members.

3,862,602

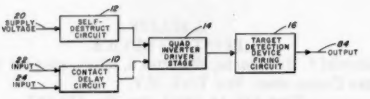
CONTACT DELAY AND SELF-DESTRUCT CIRCUIT

Larry G. Manning, China Lake, Calif., assignor to United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 14, 1970, Ser. No. 48,589

Int. Cl. F42c *11/06*

U.S. Cl. 102—70.2 R **7 Claims**



1. A fuze system for use in a projectile, comprising;

first electrical means for providing a time delay after a first predetermined event before an electrical signal is provided as an output, wherein said first predetermined event is the projectile's contact with a target, including an input from a source responsive to said contact, a quad inverter coupled to the input and providing a time delayed output after the contact, and a time delay circuit coupled to said quad inverter for delaying the output of said quad inverter;

second electrical means for providing a time delay after a second predetermined event before an electrical signal is provided as an output; and

means for providing said electrical signal output after either said first or said second predetermined event.

3,862,603

LIGHT WEIGHT SABOT

Jeffrey S. Kornblith, Oxon Hill, Md., and Jerold L. Swedlow, Pittsburgh, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 21, 1972, Ser. No. 308,382

Int. Cl. F42b *13/16, 31/00*

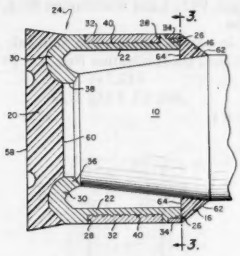
U.S. Cl. 102—93 **19 Claims**

1. A sabot comprising a plurality of separable segments and rupturable means to secure said segments in assembled condition, each of said segments having

arcuate, longitudinally extending inner and outer surfaces, one longitudinal end terminating in a portion curved toward said inner surface to form a substantially J-shape when viewed in longitudinal section, said arcuate surfaces being curved in the direction transverse to the longitudi-

nal direction, and

a plurality of longitudinal support struts integrally formed



with and extending the longitudinal length of said inner surface.

3,862,604

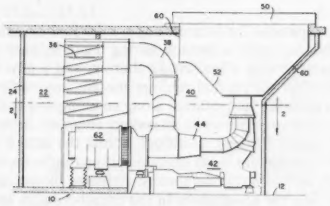
LOCOMOTIVE ENGINE COMPARTMENT

Pelabon, Andre E., Paris,, France, assignor to ANF Frangeco S.A., Couroevoie, Hauts-de-Seine, France

Filed Apr. 13, 1973, Ser. No. 350,811

Int. Cl. B61c *5/02, 5/04;* **B61d** *17/18*

U.S. Cl. 105—61.5 **7 Claims**



1. A self-propelled passenger car for a railway train having a plurality of compartments therein, one of said compartments being thermally and acoustically insulated, said one compartment being subdivided into a stabilization chamber and an engine compartment, one exterior side wall of said stabilization chamber being provided with a bi-directional air intake opening, a main gas turbine for propelling said car and an auxiliary gas turbine for supplying electrical power contained in said engine compartment, an exhaust opening provided in the exterior roof of said engine compartment and means for conducting exhaust gases from said turbines to said exhaust opening, means including air filter means for communication between the air intakes of said gas turbines and the interior of said stabilization chamber, and a sound attenuated air inlet provided in an exterior wall of said engine compartment for normal air circulation therein.

3,862,605

MOVABLE MEATHOOK

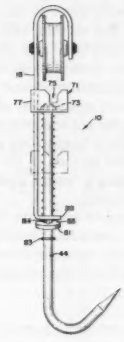
Anthony D. Cacciatore, and Joseph J. Cacciatore, both of Tampa, Fla., assignors to Joseph Ciccarello, Tampa, Fla., a part interest

Continuation-in-part of Ser. No. 198,676, Nov. 15, 1971, abandoned. This application July 9, 1973, Ser. No. 377,772

Int. Cl. B61b *3/00*

U.S. Cl. 105—151 **4 Claims**

1. A meathook assembly of the type movably mounted along an overhead rail-type conveyor, said meathook assembly comprising: frame means, running gear positioned in cooperative relation to the rail and including at least one wheel rotatably connected to said frame, a hook member including a shaft movably mounted on said frame in a direction substantially parallel to the longitudinal axis of said frame, a rail securing means connected to said hook member in movably spaced relation to said one wheel, locking means connected to said assembly in movable frictional engagement with said shaft and said frame, said locking means comprising washer means



movably and substantially concentrically mounted relative to said shaft and in spaced relation to said frame, tit means connected to said washer means and disposed to engage said frame, whereby angular orientation between said washer means and said frame occurs upon engagement between said tit means and said frame, said washer means oriented in frictional engagement with said shaft.

3,862,606

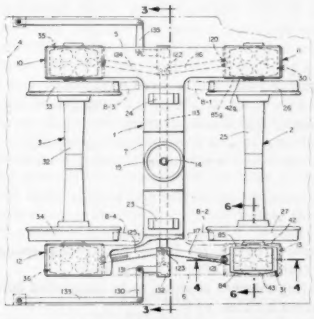
RADIAL TRUCK

Brian T. Scales, 305 Grange Rd., Aliquippa, Pa. 15001

Filed June 29, 1973, Ser. No. 375,024

Int. Cl. B61d *1/00*

U.S. Cl. 105—167 **9 Claims**



1. In a railway car truck;

a first pair of wheels mounted for rotation about a first axis;

a second pair of wheels mounted for rotation about a second axis;

frame means having mechanism for connecting the frame to a railway car;

first means connected between the frame and the first pair of wheels and providing for the wheels to move in opposite directions relative to the frame in a horizontal plane containing the first axis, said direction being transverse the first axis and said first means preventing the wheels from moving transverse the first axis in the same direction

in said horizontal plane, said opposite direction of movement of the wheels being for use in permitting the first pair to attain radial condition when the truck is negotiating a curve on a track and the prevention of wheel motion in the same direction being for use in the maintaining wheel position when the wheel brakes are applied;

second means connected between the frame and the second pair of wheels and providing for the wheels to move in opposite directions relative to the frame in a horizontal plane containing the second axis, said direction being transverse the second axis and said second means preventing the wheels from moving transverse the second axis in the same direction in said horizontal plane, the opposite direction of movement of the wheels being for use in permitting the second pair to attain radial condition when the truck is negotiating a curve on a track and prevention of wheel motion in the same direction being for use in maintaining wheel position when the wheel brakes are applied; and

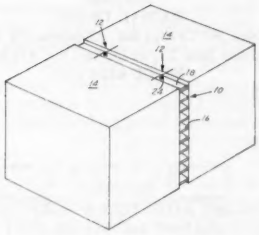
mechanism connected to said first and second means and operative in the nonradial condition of the wheels to dampen or resist said opposite direction of motion for use in attenuating such motion of the wheels due to track imperfections.

3,862,607

WIRE LOOP HANGER FOR DUNNAGE

Blaine H. Loudin, Melrose Park, Ill., assignor to The Vertical Company, Englewood, Colo.

Filed Dec. 17, 1973, Ser. No. 425,500
Int. Cl. B61d *45/00*
U.S. Cl. 105—486 **8 Claims**



1. A spacer device for filling the vertical space between adjacent transported articles comprising:

a buffering element adapted to be suspended between said adjacent articles, and

a gimbal suspension means connected to an upper surface of said buffering element and adapted to overlie said adjacent articles, said gimbal suspension means comprising a body having a centrally positioned loop portion which is loosely connected to the upper surface of the buffering element so that the gimbal can be inclined in any direction without movement of the buffering element, and

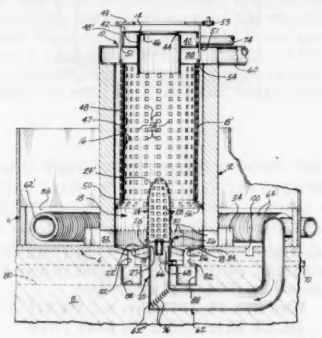
elongated oppositely directed arm portions integrally connected by the loop portion and wherein said arm portions are adapted to overlie and rest on the upper surface of the adjacent articles thereby to support said buffering element between said articles.

3,862,608

APPARATUS FOR INCINERATING SOLID FUELS CONTAINING CARBONIZABLE MATERIAL

William S. Lagen, 9931 Lake Washington Blvd, N.E., Bellevue, Wash. 98004

Continuation-in-part of Ser. No. 276,820, July 31, 1972, Pat. No. 3,777,676. This application Nov. 23, 1973, Ser. No. 418,746
Int. Cl. F23g *5/12*
U.S. Cl. 110—8 C **29 Claims**



1. In apparatus for incinerating a solid fuel containing carbonizable material, a furnace having a preliminary incineration chamber with a fuel intake therein, and a post incineration chamber with a fuel retainer therein, means for feeding the fuel onto the fuel retainer along an elongated path passing through the preliminary incineration chamber from the fuel intake, means forming an airlock across the intake to assure that the atmosphere in the chambers is unable to escape therethrough, and fluid transfer means, including blower means, for pressurizing the atmosphere in the chambers with an oxygen-containing gas, while purging the whole of the atmosphere from the preliminary incineration chamber and discharging the same into the post incineration chamber, said fluid transfer means including means disposed in the furnace adjacent one of the fuel intake and the fuel retainer, so as to form a plenum between the chambers and the blower means, which plenum extends lengthwise of the fuel flow path and which plenum forming means has apertures in the body thereof through which the plenum communicates with the fuel flow path in directions crosswise thereof.

3,862,609

INCINERATOR ASH REMOVAL APPARATUS

Christian A. Eff, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Mar. 20, 1974, Ser. No. 452,847
Int. Cl. F23j *1/00*
U.S. Cl. 110—8 R **6 Claims**

1. Ash removal apparatus for an incinerator including a combustion chamber comprising:

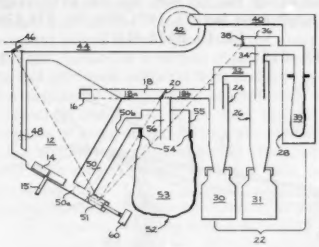
a. a blower for providing air flow for the incinerator;

b. first means for selectively directing air from the combustion chamber to said blower through a first path during ash removal operation and through a second path during incineration;

c. said first path directing air from said combustion chamber through a first separating means for removing larger ash particles and then through a second separating means for removing smaller ash particles;

d. said second path bypassing said first separating means and directing air from said combustion chamber directly through said second separating means; and

e. second means for selectively directing air discharged from said blower through a third path to said combustion



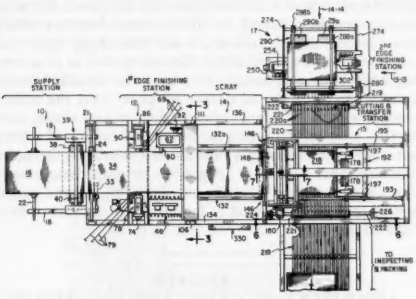
chamber during ash removal operation and through a fourth path to atmosphere during incineration.

3,862,610

APPARATUS FOR CUTTING AND FINISHING SEGMENTS OF A TRAVELING WEB

Charles E. Brocklehurst, Honea Path, S.C., assignor to Riegel Textile Corporation, Ware Shoals, S.C.

Filed Jan. 17, 1974, Ser. No. 434,024
Int. Cl. D05b *19/00*
U.S. Cl. 112—121.11 **29 Claims**



1. An apparatus for cutting segments of a traveling elongate web and finishing at least two marginal edge portions thereof, the combination comprising:

a. a frame having an input end and an output end;
b. a supply section at the input end having means for introducing a continuous web;
c. edge sensing means adapted to cooperate with an actuating device for shifting the supply means laterally in response to lateral variations of at least one edge portion of said web with respect to the frame;
d. means for advancing the web in a longitudinal direction along a predetermined path of travel;
e. means for cutting the web laterally into individual web segments;
f. means for uniformly gripping a portion of the web forwardly of and adjacent the cutting means;
g. means for advancing the gripping means forwardly while simultaneously gripping the web such that a segment portion of said web is extended past the cutting means;
h. means to actuate the cutting means for cutting the web segment from the web; and
j. means for transferring said web segment to an edge finishing section having:
1. a conveyor drum for receiving said web segments upon the outer circumferential surface thereof;
2. belt means circumferentially contacting at least a portion of the surface of said drum in a secure manner for securing said web segments against said drum;
3. means for rotatably driving said drum; and
4. first and second stitching means for finishing at least first and second cut marginal edge portions of said web, each of said stitching means being independently driven by synchronous motors so as to provide accurately and uniformly finished marginal edge portions so that each of the web segments is finished along at least two of its marginal edges.

3,862,611

SEWING MACHINE NEEDLE

Toru Kuromegawa, Osaka, Japan, assignor to Maruzen Sewing Machine Co., Ltd., Osaka, Japan

Filed Dec. 12, 1973, Ser. No. 424,044
Int. Cl. D05b *85/00*
U.S. Cl. 112—222 **1 Claim**

1. A needle for a sewing macine having an oscillating shuttle having a beak which is adapted to traverse the needle, said needle comprising a head, a reduced shank integral with said head and terminating in a tip, said shank being pierced by a transverse eye spaced from said tip, said shank having on one side a longitudinal groove of substantially uniform depth extending from said head and terminating in said eye, said shank having diametrically opposite said groove a first recess located in the zone of traverse of said beak and terminating at one end in a ramp portion adjacent said eye, said shank having diametrically opposite said groove a second recess spaced from said first recess and disposed intermediate said first recess and said head, the longitudinal cross sectional area of a portion of the shank immediately adjacent and between said eye and said ramp being substantially greater than the cross sectional area of the shank in the zone of said first recess and constituting an enlargement which influences the thread passing through the eye to form a loop of substantial size so as to be easily engaged by said shuttle beak.

3,862,612

VESSEL HULLS

Annivas Artemis, 48 Dragoumis St., Athens, Greece

Continuation-in-part of Ser. No. 350,144, April 11, 1973, abandoned. This application Apr. 11, 1974, Ser. No. 459,874
Claims priority, application France, Dec. 1, 1972, 72.42839
Int. Cl. B63b *1/18*
U.S. Cl. 114—56 **12 Claims**

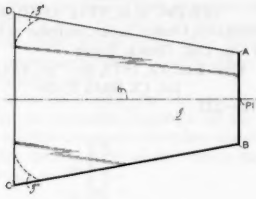
1. A hull for a ship intended for high speed operation comprising:

keel means, said keel means including an elongated keel having a V-shaped cross-section, said keel means having a longitudinal axis, the forward end of said keel defining the bow of the hull and extending above a horizontal plane through the oppositely disposed end of the keel, said keel

having a width equal to approximately one-third the length of the hull at its widest point;

hull side surface defining members extending outwardly from respective edges of said V-shaped keel, said side surface defining members being inclined with respect to a vertical plane extending through the longitudinal axis of said keel means; and

trapezoidal reference plane defining means, said reference plane defining means including the edges of said side surface defining members disposed oppositely to the edges of said members which are in contact with said



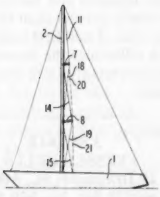
keel, said reference plane being inclined at an angle in the range of 3.5°–5° with respect to said horizontal plane and having its highest edge at the level of the bow end of said keel means, the trapezoid defined by said reference plane defining means having a longitudinal axis positioned in said vertical plane, the major base of said trapezoid defined by said reference plane defining means being equal in length to ¾ ± 6% of the length of said keel means and the minor base of the trapezoid being equal in length to 2/5 ± 6% of the length of said keel means, said minor base intersecting the bow end of said keel means.

3,862,613

RIGGING SYSTEM FOR SAILBOAT

Lars Rune Bergstrom, Sodernas Fyr, 13030 Varmdo, and Georg Sven-Olof Ridder, Tykovagen 4B, 181 61 Lidingo, both of Sweden

Filed Aug. 27, 1973, Ser. No. 391,975
Int. Cl. B63b *15/02*
U.S. Cl. 114—102 **13 Claims**



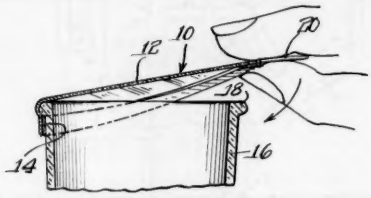
1. A rigging system for a sailing boat or yacht having a hull and a mast upstanding from the hull; the system including at least one swept spreader projecting from opposite sides of the mast at a location intermediate the ends of the mast, said spreader being swept in the fore-aft direction of the boat, and two pairs of diagonal shrouds respectively interconnecting the sections of the spreader on the opposite sides of the mast with the hull.

3,862,614

SHEET OF ELASTIC COVERS FOR CONTAINERS

Michael Kovac, St. Louis, Mo., assignor to Illinois Tool Works Inc., Chicago, Ill.

Continuation of Ser. No. 221,579, Jan. 28, 1972, abandoned. This application Jan. 23, 1974, Ser. No. 435,636
Int. Cl. B65d *41/22*
U.S. Cl. 215—317 **1 Claim**



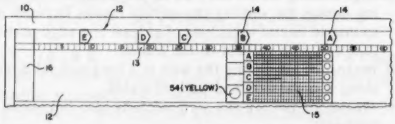
1. A lid device for application to the upper margin defining the open end of a container including sheet material forming a plurality of stretchable annular sheets, each of said stretchable cover sheets having an annnular washer member of sheet material presenting oppositely disposed substantially flat parallel surfaces, one of which has the outer periphery thereof adhered to the underside of said cover sheet and the inner periphery thereof free to move relative to said underside with the other surface exposed for subsequent impingement over substantially the entire radial width thereof with the external peripheral surface of a complementary container, said annular washer member having an initial inner diameter which is normally less than the maximum diameter of the upper margin of a container with which it is to be associated so as to require the cover sheet and annular member to be stretched manually in order to force the lid device periphery over the container margin with the aforesaid other surface of said elastic annular washer member impinging the peripheral surface of a complementary container over a substantial axial extent thereof with the free inner periphery adapted to be immediately beneath the upper margin thereof, and frangible means provided within said sheet material to facilitate detachment of each of said lid devices.

3,862,615

APPARATUS FOR CONTROLLING PROGRESS OF A TASK

Shu-Lien Liou, No. 195, Chung King North Rd., Taipei, Taiwan

Filed Nov. 20, 1973, Ser. No. 417,564
Int. Cl. G06c *3/00*; G09f *5/00*
U.S. Cl. 116—135 **9 Claims**



1. An apparatus for controlling the progress of a task which consists of one or more task elements, said apparatus comprising a progress control board which includes at least one task section, said task section comprising:

A time scale extending laterally across said task section containing indicia related to time, at least one of the indicia being representative of a target date for the completion of the task, and other indicia indicating times intermediate the start and the completion of the task for correlation with each task element;

a task element tag representing each task element which is an operational step pertaining to the completion of the task, said tag being attachable to said task section at a first portion of said progress control board, a portion of said tag including, when related to said time scale, a target date for the completion of a corresponding task element before the completion of the overall task; and

a fact card located at a portion of said task section relative to said time scale different from said first portion thereof for displaying the progress of each task element with respect to completion of the task, said fact card being capable of being moved periodically relative to said time scale and having a portion thereof which, when related to said time scale, indicates a current date, said fact card including;

segments which correspond to each of said task elements, each segment receiving indicia indicating the degree of completion of said task element associated with the particular segment, and

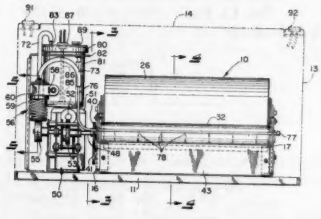
means for receiving indicia for indicating the urgency of remedial action, said indicia being selected as a result of a visual comparison of the current-date position of the fact card and the position of a particular task element tag relative to the time scale in comparison to the completion or not of the particular task element as indicated on an associated segment on the fact card, said signaling indicia indicating whether the task element is normal, ahead of, or behind schedule.

3,862,616

DISPENSING UNIT FOR MOISTENING MATERIAL

Robert C. Brady, 5850 Briar Hill Dr., Solon, Ohio 44139

Continuation of Ser. No. 787,149, Dec. 26, 1968, abandoned.
This application June 7, 1971, Ser. No. 150,851
Int. Cl. B05c *5/00*
U.S. Cl. 118—6 **6 Claims**



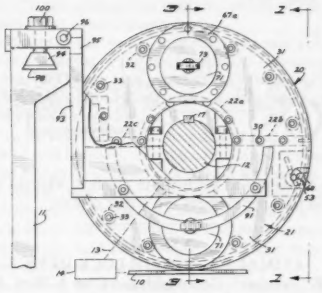
1. A cleaning material web dispensing unit comprising a supply of cleaning material web, drive means including a pair of powered drive rollers through which such web passes operative to dispense such web from such unit in a predetermined direction, liquid applicator means located adjacent said web and spaced in said predetermined direction from said drive rollers and including a plurality of transversely spaced dispensing apertures operative to apply a measured amount of liquid to such web in a uniform predetermined pattern of droplets as it is dispensed, and liquid supply means for supplying liquid to said applicator means and including a pump which is driven by said drive means in successive discharge and intake strokes as said web is dispensed from said unit and moves past said applicator means; whereby liquid is intermittently supplied to said applicator means by said pump and liquid is intermittently applied to said web by said applicator means after said web passes through said drive rollers and said liquid is applied to said web in a substantially uniformly distributed predetermined pattern at transversely and longitudinally spaced locations.

3,862,617

ROTARY GLUE BOX APPARATUS

Paul G. Prestegaard, 201 Westwood Dr., Minneapolis, Minn. 55416

Filed Apr. 27, 1973, Ser. No. 355,063
Int. Cl. B05c *1/16*
U.S. Cl. 118—213 **40 Claims**



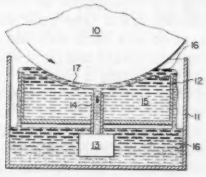
1. Rotary glue printing apparatus for printing glue on a blank comprising a rotary shaft and first means for containing a supply of glue and printing glue on a blank as the shaft rotates, said means being mounted on the shaft to rotate therewith and having an interior hollow cavity for containing a supply of glue, and a glue pad having a circumferential glue printing portion to receive glue from said cavity, and a pump mounted on said means radially outwardly of said shaft for pulsating air in the cavity as the shaft rotates to control the flow of glue through said pad.

3,862,618

LIQUID DEVELOPING APPARATUS FOR DEVELOPING AN ELECTROSTATIC IMAGE

Masamichi Sato, and Osamu Fukushima, both of Asaka, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 9, 1972, Ser. No. 305,016
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **6 Claims**

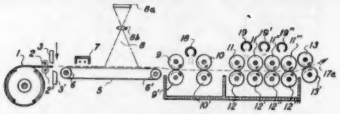


1. A liquid developing apparatus for electrostatic latent images which comprises a first tank having an open end portion and containing a body of electrically conducting liquid adapted to function as a development electrode, and a second tank having an open end portion and containing a body of liquid developer for electrostatic latent images, said first tank being disposed within said second tank and defining an annular channel therebetween, an element having an electrostatic latent image carrying surface extending into the open end portions of said first and second tanks and extending into said first tank, means for directing said electrostatic latent image carrying surface through said open end portions, and means for directing a flow of said developer liquid from the second tank and forming a thin film of developer between said surface and said conducting liquid.

3,862,619
ELECTRO-PHOTOGRAPHIC APPARATUS

Osamu Fukushima; Masamichi Sato, and Seiji Matsumoto, all of Asaka, Japan, assignors to Rank Xerox, Ltd., London, England

Division of Ser. No. 234,287, March 13, 1972, Pat. No. 3,816,114. This application Dec. 10, 1973, Ser. No. 423,621
Int. Cl. G03g *15/10*
U.S. Cl. 118—637 6 Claims

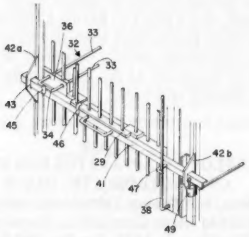


3. An apparatus as set forth in claim 2, wherein said electrode and backing element are a pair of rolls.

3,862,620
ANIMAL CAGE WITH LOCK DEVICE

Robert W. Bernhard, Greenfield, and Glen A. Rork, Indianapanapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed July 17, 1972, Ser. No. 272,515
Int. Cl. A01k *01/02*
U.S. Cl. 119—17 6 Claims



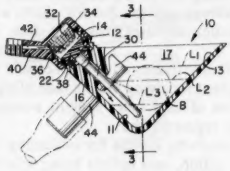
1. In an animal cage defined by a pair of side walls connected to front and back walls and top and bottom walls, said front wall having a door mounted for vertical sliding to open and closed positions, and a false back wall within said cage normally adjacent to said back wall and slidably positioned therein for movement toward said front wall, the improvement of a lock device comprising a rigid bar mounted across the exterior of said front wall for selective horizontal movement, an elongated pull handle connected to said back plate and extending through said front wall contiguous to said bar, said bar having first and second stop elements extending therefrom and blocking movement of said pull handle and door in their locked position and permitting movement upon horizontally moving said bar to a predetermined unlocked position.

3,862,621
POULTRY WATERING CUP

William S. Peppler, New York, N.Y.; Everett M. Keen, Vineland, N.J.; Anthony J. Sicliano, Vineland, N.J., and Graham Baker, Vineland, N.J., assignors to Diamond International Corporation, New York, N.Y.

Filed Mar. 1, 1973, Ser. No. 337,201
Int. Cl. A01k *7/00*
U.S. Cl. 119—75 12 Claims

1. A watering cup suitable for use in connection with poultry varying in size and/or age from baby chicks to fully mature birds, the said cup being suitable for use in conjunction with a low pressure water supply system and comprising an inlet conduit for connection with a supply, a valve assembly including a valve normally seated on a valve seat under relatively low water pressure to prevent flow of water into the cup, a valve stem extending into and through a passage in said valve assembly leading into said cup whereby actuation of said stem by poultry is readily achieved in drinking from said cup, overflow prevention drain means in the form of a hollow drainpipe extending from within said cup and through said cup whereby the height of the water may not exceed a predetermined level, namely that of said drain, and an auxiliary actuating means in the form of a floatable member of unity specific gravity pro-

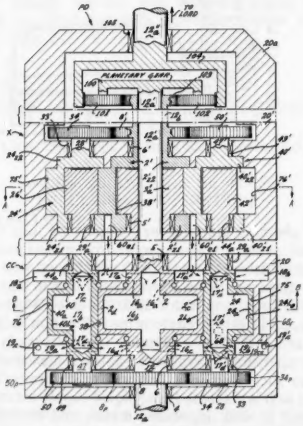


vided in said cup whereby small birds that are not sufficiently aggressive to peck at the elongated portion of the valve stem in the cup may nevertheless actuate said valve stem by causing said floatable member to be moved against said elongated portion of the valve stem, said floatable member being separate from said stem and readily removable from said cup and said cup being generally conical in shape with the wall portions thereof converging in the downward direction so that as the water level drops in said cup said floatable member will be directed closer to said stem and facilitate actuation thereof by small birds.

3,862,622
TORQUE CONVERSION SYSTEMS

Raymond G. Spinnett, 2531 S. Salta St., Santa Ana, Calif. 92704

Filed Jan. 10, 1973, Ser. No. 322,452
Int. Cl. F02b *53/08, 55/06, 55/16*
U.S. Cl. 123—8.13 6 Claims



1. A system for the continuous conversion of fuel combustion in a power source to a torque for driving an output load comprising:

a. a power source for providing a torque which includes a positive displacement rotary engine having ambient air-/inlet means; combustion fluid exhaust means; a plurality of rotors with interleaving abutments; internal hollows formed in said rotors; said rotors cooperating to define an

air compression function chamber in communication with said inlet means, a continuous combustion chamber in communication with said air compression function-chamber and a combustion-expansion function-chamber in communication with said continuous combustion chamber and said exhaust means; recirculation means in communication with the inlet to said combustion-expansion function-chamber and the outlet from said air compression function-chamber for mixing a portion of the combustion gases from said continuous combustion chamber with air discharged from said compression function-chamber; mixing means in communication with said exhaust means and said inlet means for conducting a portion of the air from said inlet means to said exhaust means;

b. a positive displacement rotary compressor empowered by said rotary engine;

c. means for conveying compressed air from said compressor through the said internal rotor hollows of said engine to the said continuous combustion chamber of said power source; and

d. a planetary differential driven by said power source and providing torque to an externally loaded output shaft while also providing torque to drive said rotary compressor.

3,862,623

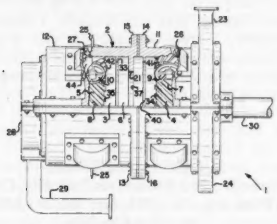
ROTARY ENGINE

Clarence W. Ehlert, 1301 Main St., Concordia, Mo. 64020

Filed Nov. 19, 1973, Ser. No. 417,392

Int. Cl. F02b *53/08*

U.S. Cl. 123—8.35 **9 Claims**



1. A rotary engine comprising:

a. a stator including a housing having walls defining a generally cylindrical inner chamber, said walls each having an inner surface;

b. a rotor rotatably mounted within said housing and having a peripheral surface in close proximity with the inner surface of said housing;

c. a power shaft operatively connected to said rotor;

d. wall means defining a pair of circumferentially extending and laterally spaced channels in one of the inner surface of said housing and the peripheral surface of said rotor;

e. a first plurality of circumferentially spaced partitions on the peripheral surface of said rotor each defining a compression blade positioned in one of said channels to divide same into a plurality of circumferential sections;

f. a second plurality of circumferentially spaced partitions on the peripheral surface of said rotor each defining a piston member positioned in the other of said channels to divide same into a plurality of circumferential sections;

g. means mounted on said housing and extending into each of the sections of said one of said channels and cooperating with said compression blades to divide each of said respective sections into a fuel intake portion and a fuel compression portion;

h. means mounted on said housing and extending into each of the sections of said other of said channels and cooperating with said piston members to divide each of said respective sections into an ignition portion and an exhaust portion;

i. means mounted on said housing for communicating fuel into the fuel intake portion of each of the sections of said one of said channels;

j. means in said one of said rotor and said walls of said housing defining a plurality of circumferentially spaced bores each extending between the fuel compression portion of a respective one of the sections of said one of said channels and a respective ignition portion of the sections of said other of said channels;

k. wall means in said one of said rotor and said walls of said housing defining a circumferentially extending recess therein, said recess being positioned between said pair of channels and intersecting each of said bores extending between said channels;

l. a valve fin extending from the other of said rotor and said walls of said housing, said valve fin being received in said recess and in close proximity to said wall means defining said recess, said valve fin having a plurality of spaced ports therethrough each successively alignable with each of said bores during rotation of said rotor to permit flow therethrough, said fin closing each of said bores except when said ports are aligned therewith;

m. fuel ignition means mounted on said housing and communicating with the ignition portion of each of the sections of said other of said channels to ignite fuel therein whereby combustion of fuel therein acts against said piston members to effect rotation of said rotor and said power shaft; and

n. exhaust flow means communicating with the exhaust portion of each of said sections of said other of said channels for permitting flow of combusted fuel therefrom in response to rotation of said rotor.

3,862,624

OXYGEN-HYDROGEN FUEL USE FOR COMBUSTION ENGINES

Patrick Lee Underwood, 13285 Dyer St., Sylmar, Calif. 91342

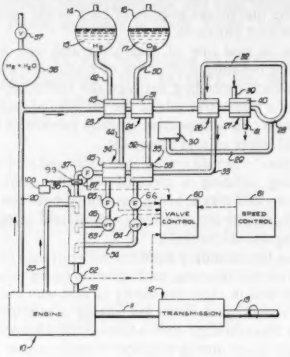
Continuation-in-part of Ser. No. 79,475, Oct. 10, 1970. This application Apr. 6, 1973, Ser. No. 348,503

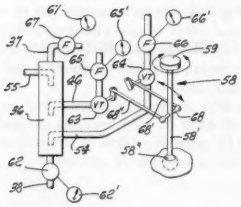
Int. Cl. F02m *25/06*

U.S. Cl. 123—119 A **10 Claims**

1. In a piston and cylinder type combustion engine of the open cycle type having a conventional combustion stage intake and exhaust valving and a crankcase and including a combustion chamber, a fuel system comprising an engine fuel intake including a mixing passage and conduit means from said mixing passage to said combustion chamber, open exhaust means from the engine including said exhaust valving, a first source of gas comprising oxygen as fuel, a second source of gas comprising hydrogen as fuel, a supply line from the first source of gas to the mixing passage, a supply line from the second source of gas to the mixing passage, the quantity of gas of the type supplied from said second source when in said mixing passage at a location adjacent said conduit means therefrom being a surplus several times greater than the quantity of the gas from the first source of gas which is productive of a stoichiometric ratio with said gas from the first source of gas, a portion of the exhaust means from the engine comprising a combined passageway for surplus gas and water vapor from the engine, a water separating device in said passageway adapted to separate water of combustion from said surplus gas and including a discharge means for water open to the atmosphere, a heat exchanger in said combined passageway on the upstream side of said water separating device, and a gas return

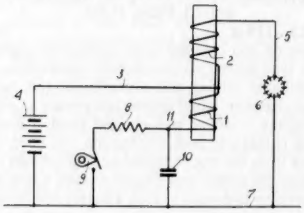
line for said surplus gas leading from said water separating device to said mixing passage whereby to maintain a surplus





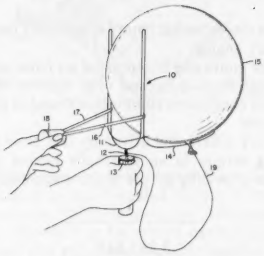
of said gas from said second source of gas in the engine at the combustion stage.

3,862,625
IGNITION DEVICE FOR EXPLOSION ENGINES
Vincenzo Fazzo, Via Albani 7, Milan, Italy (20149)
Filed Sept. 29, 1972, Ser. No. 293,741
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 DC **3 Claims**



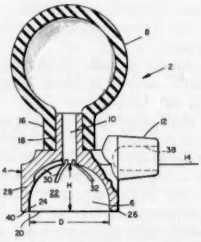
1. An electrical ignition device for explosion engines comprising an ignition coil including a primary and a secondary winding circuits, a source of electrical current connected to at least one of said winding circuits, a sparking plug branch connected with said secondary circuit, circuit breaker means in series with said primary winding circuit, a resistor in series with said primary winding circuit and a condenser directly connected between the point of connection of said primary winding circuit with said resistor and the ground, said primary winding circuit being of the type in which the primary winding circuit has a low ohmic resistance, and wherein, according to the improvement, said resistor is arranged in series with said primary winding circuit between said circuit breaker means and the point of connection of said condenser with said primary winding circuit.

3,862,626
ARTICLE PROJECTING DEVICE FOR TOY BALLOON
Cecilia Rosalie Doherty, P.O. Box 1203, Santa Monica, Calif. 95006
Filed June 26, 1972, Ser. No. 252,221
Int. Cl. F41b *7/00*
U.S. Cl. 124—17 **1 Claim**



1. An article projecting device comprising a handle, a substantially Y-shaped member formed from one continuous length of wire and including a portion extending forwardly of the substantially Y-shaped member to form a support for an article to be projected, said wire having its two free ends defining said handle, said substantially Y-shaped member having connected thereto a single free end of each of two elastic members, said elastic members having their other free ends connected to a resilient member which impacts against the article to be projected.

3,862,627
SUCTION ELECTRODE
Wendel J. Hans, Sr., 703 Josina Ave., Palo Alto, Calif. 94306
Filed Aug. 16, 1973, Ser. No. 389,038
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E **3 Claims**



1. A suction electrode comprising a cup having an electrically conductive interior surface, the cup terminating in a continuous inwardly directed edge defining an aperture providing access to the surface, a termial point of the edge having a minimum radius of about 0.015 inch, the cup having an interior transverse dimension in a plane parallel to the aperture which is larger than a corresponding transverse dimension of the aperture, the interior surface further having a depth measured from the aperture which is about 0.75 times a transverse dimension of the aperture, means disposed approximately opposite from the aperture for evacuating the

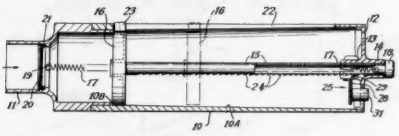
cup, and means for connecting the surface with an electrical conductor.

3,862,628

PEAK FLOW METERS

Garnet Montague Eveleigh Williams, London, England, assignor to Ferraris Development and Engineering Company Limited, London, England

Filed May 2, 1972, Ser. No. 249,520
Int. Cl. A61b 5/08; G01f 3/12
U.S. Cl. 128—2.08 **5 Claims**



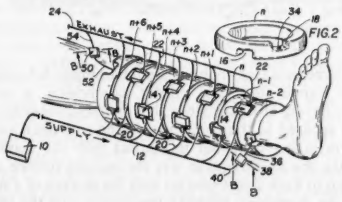
1. A peak flow meter for determining the maximum flow of air which a person can produce when exhaling air, comprising a casing having a mouthpiece and defining a chamber, a member having an inoperative position and movable relative to the casing within the chamber and carrying an indicator movable relative to scale markings on the casing, resilient means acting upon the movable member to oppose movement of the movable member away from the mouthpiece and retain it in contact with abutment means, and a slotted area extending through the casing into the chamber arranged to receive the movable indicator, the width of the slot being uniform, the arrangement being such that air blown into the mouthpiece by a person acts upon the movable member to urge it away from the mouthpiece against the action of the resilient means, such movement of the movable member away from the mouthpiece increasing the length of the slot portion which opens into that part of the chamber between the mouthpiece and the movable member and through which air blown into the chamber can escape, in which the improvement comprises providing a frusto-conical chamber wall surrounding the movable member, said frusto-conical wall extending beyond said abutment means and in the direction of movement of the movable member, said indicator being movable into an operative position by air blown into the mouthpiece with the degree of movement of the indicator partly dependent upon the direction in which the frusto-conical wall extends.

3,862,629

FLUID PRESSURE CONTROLLED MEANS FOR PRODUCING PERISTALTIC OPERATION OF SERIES-CONNECTED INFLATABLE CHAMBERS IN THERAPEUTIC DEVICES, PUMPS AND THE LIKE

Nicholas R. Rotta, 17-85 215th St., Bayside, N.Y. 11360

Filed May 2, 1973, Ser. No. 356,479
Int. Cl. A61h 1/00
U.S. Cl. 128—24 R **4 Claims**

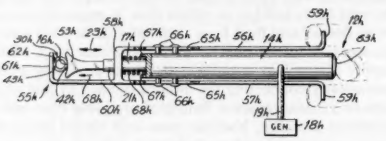


1. In combination, supply means for supply fluid pressurized to a predetermined pressure, supply manifold means connected with said supply means, a plurality of inflatable chambers made of elastomeric material expansible and contractable under changing fluid pressure, said chambers being arranged in a series comprising a first chamber, a plurality of intermediate chambers extending in series downstream of said first chamber and a last chamber downstream of said intermediate chambers, means for producing a continuous series of pressure pulses sequentially along said series of chambers comprising: means providing a supply passageway for connecting each of said chambers individually with said supply manifold means, bistable open and closed supply valve means associated with each of said supply passageways except that for said first chamber to afford flow at a predetermined rate or no flow of said fluid from said manifold through said supply passageway to the interior of the chamber with which said supply passageway is connected, means providing an exhaust passageway connecting the interior of each of said chambers with an exhaust region at fluid pressure lower than said predetermined pressure, bistable open and closed exhaust valve means associated with each of said exhaust passageways except that for said last chamber to afford flow at a predetermined rate or no flow of said fluid from the chamber with which said exhaust passageway is connected to said region, a plurality of fluid pressure responsive valve control means each connected between each chamber and the chamber immediately downstream thereof in said series by means of passageways communicating respectively with the interior of the upstream and downstream chambers thus connected, each of said valve control means being movable in opposite directions into either of two stable positions in response to the differential in fluid pressure between the two chambers which each of said valve control means connect, each of said valve control means being thus movable in one direction to one stable position by movement initiated only when the fluid pressure in the connected upstream chamber is substantially equal to said predetermined pressure and the fluid pressure in the connected downstream chamber is substantially equal to that in said exhaust region, means responsive to the movement of each of said valve control means in said one direction for opening the exhaust valve means for the connected upstream chamber and for opening the supply valve means for the connected downstream chamber to progressively lower the pressure in the connected upstream chamber and to progressively raise the fluid pressure in said downstream chamber substantially to said predetermined pressure, and each of said valve control means being thus movable in another direction to another stable position by movement initiated only when the progressively rising fluid pressure in said connected downstream chamber rises to substantially equal the progressively lowering fluid pressure in said connected upstream chamber, means responsive to the movement of each of said valve control means in said another direction for initiating the closing of the supply valve means for said connected downstream chamber and for initiating the closing of the exhaust valve means for said connected upstream chamber, each of said valve control means including means for delaying completion of the initiated closing of said supply valve means for said connected downstream chamber and of said exhaust valve means for said connected upstream chamber for a predetermined period of time sufficient to insure that the pressure in said connected downstream chamber rises substantially to equal said predetermined supply pressure and to insure that the pressure in said connected upstream chamber lowers substantially to equal the pressure in said exhaust region, said valve control means when in said another stable position holding closed the exhaust valve means for said connected upstream chamber and also holding closed the supply valve means for said connected downstream chamber whereby to place the next cycle of inflation of said connected upstream chamber under control of the chamber immediately upstream thereof and to place the next cycle of exhaust of said connected downstream chamber under control of the chamber immediately downstream thereof.

3,862,630
ULTRASONIC SURGICAL METHODS

Lewis Balamuth, Southampton, N.Y., assignor to Ultrasonic Systems, Inc., Farmingdale, N.Y.

Division of Ser. No. 179,459, Sept. 10, 1971, Pat. No. 3,794,040, which is a division of Ser. No. 678,649, Oct. 27, 1967, Pat. No. 3,636,943. This application Dec. 10, 1973, Ser. No. 423,061
Int. Cl. A61h *1/00*; A61b *17/12*; A61n *3/00*
U.S. Cl. 128—024 A 3 Claims



1. A method of joining together overlapping portions of layers of tissue in vivo, comprising the steps of

A. applying ultrasonic mechanical vibrations to the overlapping portions of said layers of tissue in their area of overlap, said mechanical vibrations being applied in a direction substantially normal to said area of overlap,

B. simultaneously compressing said layers of tissue together in their area of overlap,

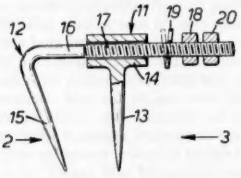
C. selecting the frequency and amplitude of said ultrasonic mechanical vibrations to produce a superficial heating at the interface of said overlapping layers of tissue, and

D. continuing the application of said mechanical vibrations and compressive force until said layers of tissue are fused together at said superficially heated interface.

3,862,631
SURGICAL IMPLANTS

Roger Tilston Austin, Moseley Birmingham, England, assignor to Down Bros. and Mayer & Phelps Limited, both of Surrey, England

Filed May 16, 1973, Ser. No. 360,932
Int. Cl. A61f *5/04*
U.S. Cl. 128—92 B 4 Claims

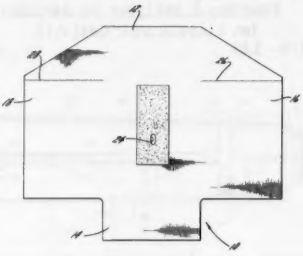


1. A surgical implant in the form of a staple having only two main leg-carrying parts, the first part having a single elongated substantially straight pointed leg for insertion in a bone on one side of a site of fracture and an annular head in the form of a cylindrical collect, and the second part being generally "L-shaped" and having a single elongated substantially straight pointed leg for insertion in the bone on the other side of the site of fracture and a portion that is screw-threaded over at least a part of its length and is passed through the annular head of the first part of the staple, at least one of said legs being inclined one towards the other and the staple additionally comprising a nut screwed onto the screw-threaded portion so as to hold said first part and said second part together by means of which nut said first part and said second part can be moved relative to one another after insertion of the staple into the bone, so as to draw the two parts of the bone together.

3,862,632
SURGICAL DRAPE HAVING INTEGRAL LEGGINGS AND METHOD OF MAKING

Kurt W. Hinsch, Tucson, Ariz., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Feb. 23, 1973, Ser. No. 335,108
Int. Cl. A61b *19/06*
U.S. Cl. 128—132 D 8 Claims



1. A surgical drape having integral leggings therein, comprising:

a main sheet having a head end portion, a foot end portion and two side portions where said leggings are located;

said main sheet having a fenestration located generally midway between said head and foot end portions and said side portions;

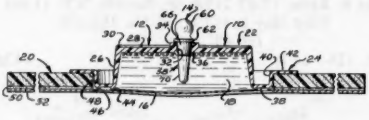
said main sheet being inwardly cut from both outside edges toward the center and adjacent said fenestration, each side portion below the cut line being folded inwardly to define a diagonal fold line, the edges of each said folded over side portion defining, together with the unfolded side portion nearer said head end portion, three sides of a generally quadrangular shape;

each of said leggings being comprised of a generally quadrangular piece of material attached to said main sheet along said three sides of said shape to define a pocket between said folded over side portion and said piece in which the leg of a patient may be inserted while in the lithotomy position.

3,862,633
ELECTRODE

Kenneth C. Allison, 1546 S. Shore Dr., Crystal Lake, Ill. 60014, and William H. Cooley, 1228 Westmoor Rd., Winneika, Ill. 60093

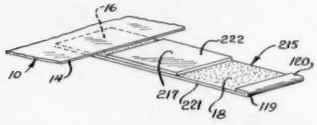
Filed May 6, 1974, Ser. No. 467,206
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 E 14 Claims



1. A biomedical electrode for use on a subject for receiving electrical signals from said subject, comprising: a resilient container having an open side, a thin microporous diaphragm sealingly secured to the container closing said open side, an electrolyte in the container in contact with the diaphragm permeating the diaphragm to wet the outside surface of the diaphragm to have direct contact with the surface of a subject through the diaphragm between the surface and the electrolyte in the container, said container having a filling aperture, a resilient annular sealing flange formed integral with the container and extending inwardly to the filling aperture, and

a terminal plug mounted in said filling aperture in sealing engagement with the annular sealing flange and having a portion in contact with the electrolyte to form a half cell therewith, said terminal plug locked in said filling aperture by said sealing flange, said terminal plug including a head extending exteriorly of the container, and a body positioned in the filling aperture and in sealing engagement with the resilient annular sealing flange to seal closed the filling aperture.

3,862,634
FASTENER FOR DISPOSABLE DIAPER
Rudolph E. Small, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.
Filed Mar. 29, 1973, Ser. No. 345,962
Int. Cl. A61f *13/16*
U.S. Cl. 128—284 **5 Claims**



1. In a disposable diaper having a pair of opposed, relatively elongated sides with end portions of each side being adapted to be connected together to secure the diaper on an infant,

an improved tape fastener for each side secured to said diaper adjacent an end of its corresponding side and comprising a relatively elongated tab projecting generally normally outwardly from its corresponding side,

each tab having its length divided into three zones to provide a fist zone at one tab end equipped with a pressure sensitive adhesive constituting the means for securing each tab to said diaper,

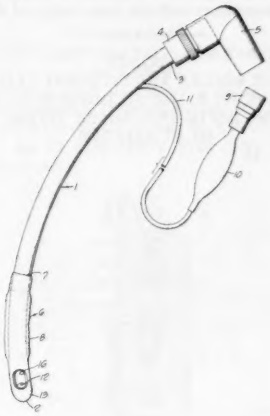
a third of said zones being at the other end of said tab and equipped also with a pressure sensitive adhesive to constitute the means for securing the ends of each diaper side together, said third zone having a length approximately equal to the length of the second zone and prior to application of the diaper to an infant being folded over said second zone,

said second zone being equipped with release surface means confronting the adhesive in said third zone to facilitate unfolding of said tab,

said release surface means being substantially integral with said second zone whereby said release surface means remains associated with said second zone upon unfolding and detaching said third zone from said second zone.

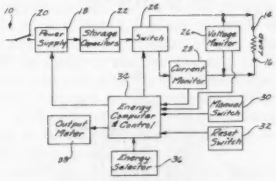
3,862,635
SMOOTH TIPPED ENDOTRACHEAL TUBE
Andrew Harautuneian, Westlake Village, Calif., assignor to American Hospital Supply Corporation, Evanston, Ill.
Filed Apr. 23, 1973, Ser. No. 353,244
Int. Cl. A61m *25/00*
U.S. Cl. 128—351 **7 Claims**

1. In a medical endrotracheal tube comprising: a preformed theremoplastic balloon with a permanently enlarged central portion integrally connected by front and rear collars that respectively define front and rear ends of the balloon; and a dual-lumen theremoplastic tube within and secured to each of the balloon collars, said central portion being spaced from said tube, the tube having a main lumen, an inflation lumen, and a port that connects the inflation lumen with the interior of the enlarged central portion of the balloon; means for providing for safe insertion of the tube into a patient's tracheal passage and deterring inadvertent trauma to the patient comprising said tube having a front end that terminates at the front end of the front collar, an opening having a smooth annular relieved edge lip portion, the combined tube and overlying collars being homogeneously fused and forming a smooth continuous uninterrupted slide zone surface having a smooth seamless slide zone extending from the annular lip at the open forward end of the tube to the central portion of the balloon so that the tube can smoothly slide into the tracheal passage in a patient, said fused forward ends of the collar and tube comprising a bonded homogeneous mass of thermoplastic



material for resisting delamination of the collar and the dual lumen tube, the said enlarged central portion of the thermoplastic balloon and the dual lumen tube, in the normal uninflated condition, forming an annular space therebetween, said inflation lumen being fused shut at a forward end portion, forwardly of the inflation lumen's communication with the enlarged central portion of the balloon.

3,862,636
COMPUTER CONTROLLED DEFIBRILLATOR
David Bell, and William K. Hagan, both of Omaha, Nebr., assignors to Health Technology Labs, Inc., Omaha, Nebr.
Continuation-in-part of Ser. No. 219,455, Jan. 20, 1972, Pat. No. 3,782,389. This application Nov. 29, 1973, Ser. No. 420,291
Int. Cl. A61n *1/36*
U.S. Cl. 128—419 D **5 Claims**



1. A defibrillator comprising in combination,

an electrical power source,

a set of electrodes engageable with a patient,

electrical circuit means connecting said power source to said set of electrodes

comprising, a computer means, a storage capacitor means for storing energy derived from said power source, an energy selector means for selecting the energy to be delivered to the patient, said energy selector means also feeding an input to said computer means, a switch means for causing the stored energy to be connected to the patient, said switch means being operatively electrically connected to said computer means, a power mon-

itor means for feeding signals to said computer means when said stored energy is delivered to the patient, said computer means computing the energy delivered to the patient and causing the delivery of energy to the patient to be discontinued when the computed energy substantially equals the selected energy,

said electrical circuit means also comprising means for selecting the magnitube of current delivered to the patient in accordance with the body weight of the patient.

3,862,637

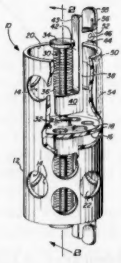
HAIR ROLLER AND INTEGRAL CLIP

George W. Petri, 347 E. Main St., Lexington, Ky. 40507

Filed July 16, 1973, Ser. No. 379,629

Int. Cl. A45d 2/00

U.S. Cl. 132—40 **4 Claims**



1. Hair roller apparatus comprising, in combination:

a cylindrical body including a plurality of apertures extending therethrough;

an interior wall extending diametrally within said cylindrical body;

center post means located centrally and extending axially within said cylindrical body from said interior wall; and

clip means movable on said center post means for retaining hair wound about said cylindrical body.

3,862,638

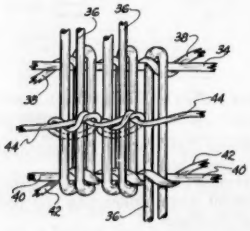
CAPLESS WIG CONSTRUCTION

Larry L. Fannin, Columbus, Ohio, assignor to Nu-Look Fashions, Inc., Columbus, Ohio

Filed Feb. 21, 1974, Ser. No. 444,271

Int. Cl. A41g 3/00

U.S. Cl. 132—53 **6 Claims**



1. A capless stretch wig comprising, in combination, a foundation base means provided with an inelastic front portion and an inelastic rear strip portion, said inelastic portions being connected to one another by a plurality of spaced elastic strips to form a shape conforming to the human head, a portion of said elastic strips extend substantially parallel to one another from the front toward the rear portion of said base means with at least one elastic strip being generally U-shaped and having each leg portion connected to the inelastic rear portion of said base means; and a plurality of elastic hair wefts connected to said elastic strips of said base means, each of said wefts provided with hair fibers woven to said wefts to permit the length of said wefts between points of connection with said elastic strips to be elongated to at least approximately 150 percent of their normal length.

3,862,639

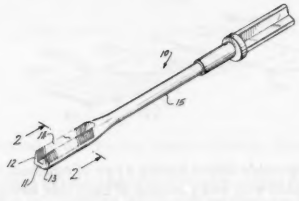
MASCARA APPLICATOR

Eli I. Schefer, Sands Point, and Albert B. Skolnik, Merrick, both of N.Y., assignors to Revlon, Inc., New York, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,680

Int. Cl. A45d 24/22

U.S. Cl. 132—112 **1 Claim**



1. A mascara applicator comprising in combination

a. an elongated supporting base and

b. a handle extending from an extremity of the base, said base having in integral construction therewith two rows of parallel teeth to form two parallel combs, said combs and base forming a trough.

3,862,640

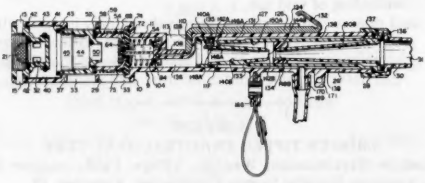
ANTI-BACKFLOW WATER CONTROL AND SOLUTION PROPORTIONER

Valentine Hechler, IV, 26 Meadow View Rd., Northfield, Ill. 60093

Continuation-in-part of Ser. No. 333,309, Feb. 16, 1973, abandoned. This application Nov. 26, 1973, Ser. No. 418,899

Int. Cl. F16k 11/00

U.S. Cl. 137—1 **32 Claims**



1. An anti-contamination device for a pressurized potable water system having a dispensing outlet;

a housing defining a compartment having an inlet means connectable to said dispensing outlet, an outlet means connectable to a dispensing means and vent means disposed between the inlet means and outlet means;

a normally closed inlet valve in communication with the inlet means and including a first member moved by water pressure at the inlet means to open the inlet valve;

an outlet valve in communication with the outlet means closing in the direction of flow of water to the outlet means and including a second movable member;

resilient means for urging the second member to connect said outlet means in communication with said vent means;

said members defining a chamber between said valves; and

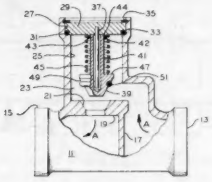
resilient means urging separation of said members to vent

said chamber when the water pressure at the inlet is a low predetermined positive gauge pressure.

3,862,641
HEAT AND FLOW SENSITIVE SAFETY SHUT-OFF VALVE

John L. Follett, 14554 Richmond Ave., Fair Haven, N.Y. 13064

Continuation-in-part of Ser. Nos. 257,655, May 30, 1972, , and Ser. No. 322,735, Jan. 11, 1973, , and Ser. No. 322,759, Jan. 11, 1973,. This application Mar. 7, 1973, Ser. No. 338,884
Int. Cl. F16k *17/38*
U.S. Cl. 137—75 **7 Claims**



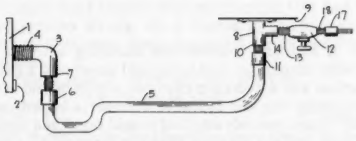
1. An automatic shut-off valve operable to seal off the flow in a fluid supply line in response to an unsafe condition, said valve comprising in combination:

a. a valve body having inlet and outlet openings with a fixed valve seat therebetween;
b. a movable closure element normally spaced from the seat to allow flow therethrough and movable to bring one end thereof into engagement with said seat to block flow in response to an unsafe condition;
c. means defining a hollow recess extending into the end of said closure element opposite said one end;
d. a fixed guide element extending into said recess in close proximity to the wall thereof to define the path of movement of said closure element from said spaced to said blocking positions; and
e. means forming a seal around the entire periphery of said recess isolating said guide element from matter outside said recess;
f. said sealing means comprising a fusible connection, releasable in response to an unsafe condition to permit movement of said closure element from said spaced to said blocking position.

3,862,642
AIR BLEEDING DEVICE

John H. Starke, New City, N.Y., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Dec. 19, 1973, Ser. No. 425,960
Int. Cl. F16l *3/00*
U.S. Cl. 137—354 **2 Claims**



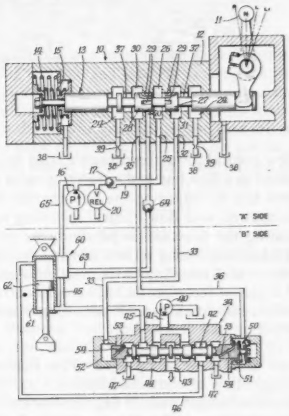
1. An air bleeding device for a hydraulic system having a cylinder with a bleeder cap, said air bleeding device comprising

a street elbow having one end threadedly coupled to the cylinder;
a hydraulic high pressure hose threadedly coupled at one end to the other end of the elbow;
an L-type fitting bracket adapted to be affixed to a supporting surface and threadedly coupled at one end to the other end of the hose; and
a high pressure liquid hand valve threadedly coupled at one end to the other end of the bracket.

3,862,643
PILOT PUMP BLEED CONTROL FOR EARTHMOVING SCRAPERS

Joseph E. Dezelan, Joliet, and Henry J. Jessen, Wilmington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 26, 1973, Ser. No. 335,910
Int. Cl. F15b *13/042*; F16k *11/07*
U.S. Cl. 137—625.63 **3 Claims**



1. A pilot bleed control system for a remotely located control valve comprising:

a pilot pump providing a source of pressurized fluid;
a pilot valve connected to said pilot pump to receive said pressurized fluid, said pilot valve having two spaced apart outlet grooves and also having a pilot valve spool with separate metering lands thereon for metered fluid flow to each of said outlet grooves when said pilot valve spool is in the neutral position, means in said pilot valve connecting each of said outlet grooves to drain via restricted passages in the neutral position of said pilot valve and operable to cause a positive pressure in each of said grooves due to said metered fluid flow thereto, said pilot valve spool having a spring centering means operable to return it to the neutral position and also having manually operated lever means connected thereto to reciprocate said pilot valve spool;
a control valve having supplied thereto a separate source of fluid pressure and also having a control valve spool for controlling fluid communication to its control ports for communicating such fluid pressure, said control valve having a chamber means at opposite ends of said control valve spool, each chamber being in communication with its associated end of said control valve spool;
a first conduit means connecting one of said outlet grooves with one of said chamber means;
a second conduit means connecting said other of said outlet grooves with said other chamber means;
a biasing means connected to said control valve spool operable to urge it to a neutral position; and
bleed passages in each end of said control valve spool communicating with a drain operable to bleed pressure from within its associated chamber means to said drain

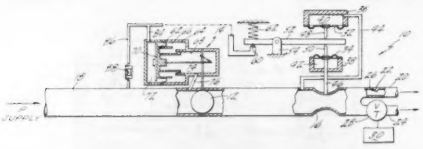
whereby a positive bleed is achieved through the control system at all times and said control valve spool will shift proportional to a pressure differential occurring in said several chamber means created when said pilot valve spool is manually shifted to create such pressure differential.

3,862,644

FLOW CONTROL

Floyd R. Emmons, Simsbury, and George C. Rannenberg, Canton, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 12, 1973, Ser. No. 378,475
Int. Cl. F16k *31/145*
U.S. Cl. 137—486 **6 Claims**



1. A flow control for a compressible fluid having a restriction disposed in a flow line and a metering valve also disposed in said flow line for adjusting the flow therein in response to said flow control, said flow control including sensing means for measuring the pressure in proximity to said restriction, control means responding to said sensing means operatively connected to said metering valve, said sensing means comprised of a pair of force producing elements arranged to produce a differential force signal in accordance with the following equation:

where:

$$W \quad T = \quad P_1C_1 - P_1(P_1 - P_a)C_2$$

W = weight flow of controlled fluid
T = absolute temperature in degrees Rankine
P_1 = pressure in pounds per square inch absolute (psia) of fluid upstream of flow restriction or
P_a = total pressure absolute (psia) surrounding the flow control
C_1 = constant indicative of fluid properties and mechanical arrangement
C_2 = constant indicative of mechanical arrangement whereby said control means positions said metering valve for maintaining a substantially constant weight flow of the compressible fluid.

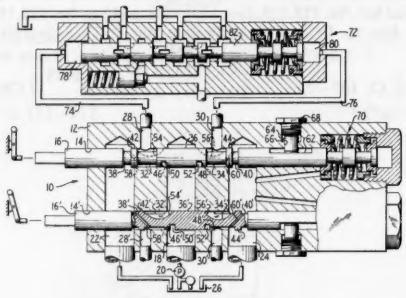
3,862,645

PILOT CONTROL VALVE

Donald L. Bianchetta, Coal City, and Kenneth R. Lohbauer, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 237,255, March 23, 1972, Pat. No. 3,771,564. This application June 18, 1973, Ser. No. 370,820
Int. Cl. F15b *13/04*
U.S. Cl. 137—625.69 **6 Claims**

1. A pilot control valve, said valve comprising:
a housing;
a cylindrical bore formed in said housing;
inlet and return passages communicating with said bore;
a pilot control passage communicating with said bore;
a valve spool reciprocally mounted in said bore and operative in a neutral position to block communications between said passages and operative upon movement from said neutral position to provide communications between said passages; and
modulating means carried by said spool and operative to provide stepped differential pressure changes in the communication of fluid from the inlet passage to said pilot control passage,
said modulating means comprising a first fixed passage and a cross slot formed in said valve spool for providing substantially instantaneous full communication with said fixed passage upon movement of said valve spool from said neutral position, and



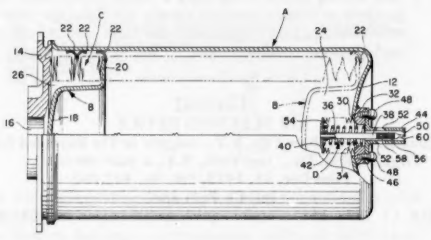
a variable area slot formed in said spool and operative to provide variable communication in parallel with said first fixed passage between said inlet and said pilot control passage upon continued movement of said valve spool from said neutral position.

3,862,646

COMBINED FILLING TUBE AND PRESSURE INDICATOR

Manuel A. Tarsha, Santa Ana, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Dec. 17, 1973, Ser. No. 424,952
Int. Cl. G01l *23/32*; F16k *37/00*
U.S. Cl. 138—104 **9 Claims**



1. A hydraulic accumulator including a vessel having a movable diaphragm separating said vessel into a gas pressure chamber and a hydraulic chamber, a port in said vessel communicating with said hydraulic chamber, a biased visible indicator means movably attached to said vessel and communicating with said gas pressure chamber for indicating absence of or existence of a predetermined pressure in said gas pressure chamber, said indicator means including an elongated selectively hollow tube through which said gas pressure chamber is charged to said predetermined pressure, and said biased tube providing the only access opening in said vessel to said gas pressure chamber.

3,862,647

APPARATUS FOR DIRECTING WEFT THREAD INTO A GROOVE OF A ROTARY REED OF WEAVING LOOMS

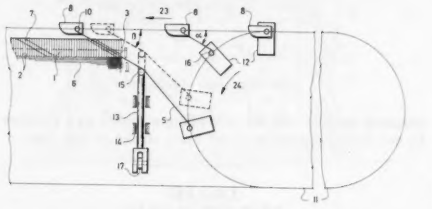
Josef Holub; Josef Lzicar; Jan Dubanek, and Jaroslav Stech, all of Usti nad Orlici, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed June 4, 1973, Ser. No. 366,403

Claims priority, application Czechoslovakia, June 12, 1972, 4053-72

Int. Cl. D03d 47/26

U.S. Cl. 139—12 4 Claims



1. In a traveling-wave shedding loom having wave-traveling shed forming means, a plurality of weft inserting means adapted to follow an endless path and each carrying a pirn with a necessary weft thread length to be inserted into said wave-traveling shed, a plurality of spooling heads designed to follow, within a certain section, the same endless path as said weft inserting means and to pay off said necessary weft thread length to the respective weft inserting means within said certain section of said endless path, said weft inserting means then leaving said respective spooling head and proceeding in its course toward the wave-traveling shed along a straight path and a rotary reed comprising a plurality of recessed discs disposed face-to-face on a common shaft in such a relative angular position that said recesses together form a helican groove to receive the weft thread for conveying it to a beat-up position adjacent the fell of the woven fabric being produced while said weft thread in the region between said weft inserting means and said spooling head is being simultaneously tensioned, the axis of said rotary reed extends parallel to said straight path of said weft inserting means, the improvement which comprises a weft thread deflecting element disposed between said rotary reed and the path of said spooling head and means to reciprocate said weft thread deflecting element between two extreme positions while shunting said weft thread in each of said extreme positions and between them so as to maintain an angle of the weft thread entering and already received by said helical groove in said rotary reed to correspond to the lead angle of said groove, the weft thread, in one of said extreme positions of said weft thread deflecting element being beaten up to the fell of woven fabric by the foremost disc of said rotary reed.

3,862,648

WEFT THREAD CLAMP AND CUTTER FOR TRAVELLING-WAVE SHEDDING LOOMS

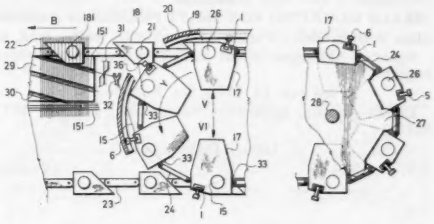
Jaroslav Langr; Josef Lzicar; Vladimir Mateju; Usti Nad Orlici, and Jarolsav Krulik, all of Zamberk, Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed June 5, 1973, Ser. No. 367,174

Int. Cl. D03d 47/35

U.S. Cl. 139—12 3 Claims

1. A weft thread clamp for travelling-wave shedding looms wherein weft thread is inserted into a warp shed by means of weft inserters advancing toward the shed from spooling heads and having within a spooling station a common path with the latter, the clamp comprising a body with a groove adapted to receive for reciprocation a slider carrying a rotatable follower to be engaged by a cam groove provided in a bridge stationary on the machine frame for displacing the slider between two dead centers, and further comprising means for attaching the weft thread clamp to the spooling head, the improvement which comprises, the end portion of the slider protruding from the clamp body forming between two lateral walls a guideway for reciprocation of a first clamping jaw of said weft thread clamp, resiliently forced into said guideway, a second clamping jaw being formed as a hook at the extremity of the slider, said jaws being released and ready for seizing the weft thread in one of said dead centers of the path section within which the weft inserter leaves the spooling head on its way to the shed, while in the second dead center the jaws are gripped by retracting the hook under said first clamping jaw for retaining the seized weft thread until the next start of the process of spooling the weft thead on to the weft inserter.



3,862,649

COVERING BAND FOR WEFT INSERTER DRIVING MECHANISM IN MULTIPLE-SHED WEAVING MACHINES

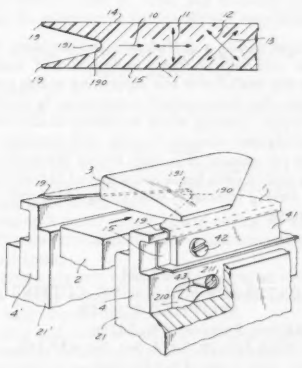
Zdenek Kramenic, Chocen; Zdenek Zabrodsky, Usti nad Orlici; Jana Didkova, Usti Nad Orlici; Hradec Kralove, Usti nad Orlici, and Rudolf Imramovsky, Usti nad Orlici, all of Czechoslovakia, assignors to Vyzkummy Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia

Filed June 11, 1973, Ser. No. 368,604

Claims priority, application Czechoslovakia, June 12, 1972, 4062-72

Int. Cl. D03d 47/26

U.S. Cl. 139—12 9 Claims



1. In a multiple-shed weaving machine having a plurality of travelling weft inserters, a flexible endless driving member for driving the weft inserters and a resilient covering band forcibly engaging the inserters and separating them from the driving member, the improvement which comprises: the covering band possesses its highest elasticity in the direction of the driving force of the driving member and in the direction per-

pendicular to said driving force, in the direction lying intermediate the direction of the driving force and the direction perpendicular thereto the elasticity of the covering band is at its lowest and means for firmly clamping the covering band along the two sides thereof on fixed structure of the machine.

3,862,650

HEALD MOUNTING FOR SHAFT FRAMES OF LOOMS

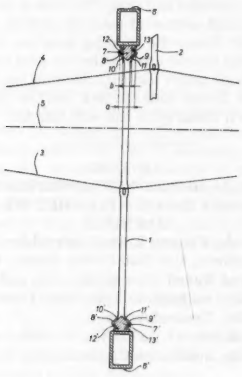
Allan William Henry Porter, Lustmuhle/Ar, Switzerland, assignor to Aktiengesellschaft Adolph Sauer, Arbon, Switzerland

Filed Jan. 24, 1974, Ser. No. 436,334

Claims priority, application Switzerland, Jan. 18, 1973, 702/73

Int. Cl. D03c 9/04

U.S. Cl. 139—91 **10 Claims**



1. In a loom having a shaft frame, for shedding, including heald laths and lateral frame supports, and shaft staves mounted in the shaft frame and supporting healds guiding the warp threads, the improvement comprising, in combination, said shaft staves carrying heald mounting heads; each heald being an elongated element formed, intermediate its ends, with an eye for passage of a warp thread there-through, and at least one end of each heald being forked to form a gripping jaw means having releasable snap engagement with the head of a shaft stave.

3,862,651

APPARATUS FOR MEASURING, CUTTING AND SPLITTING TIMBER

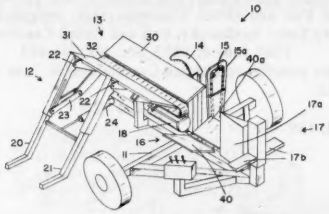
Leo L. Heikkinen, Prentice, Wis. 54556

Filed Jan. 28, 1974, Ser. No. 437,344

Int. Cl. B27l 7/00

U.S. Cl. 144—3 K **7 Claims**

1. An apparatus for measuring, advancing, cutting and splitting timber comprising: a frame for supporting a timber to be measured, advanced, cut ahd split; a timber supporting bed located on said frame for supporting and advancing a timber into a position to be cut; said timber supporting bed including a timber advancing member; means mounted on said frame for cutting said timber; a splitting wedge for splitting a cut timber; a power activated ram having a cycle stroke mounted on said frame for forcing a cut timber into said splitting wedge to thereby split the timber into at least two parts; means



mounted on said ram for advancing a timber to a position to be cut during a portion of the cycle stroke of said ram.

3,862,652

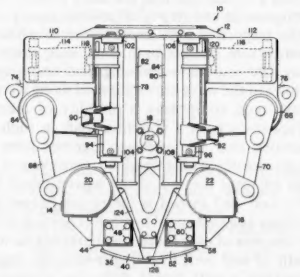
TREE SHEAR HEAD

Earl Clinton Johnson, Bellevue, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Feb. 7, 1974, Ser. No. 440,304

Int. Cl. A01g 23/08

U.S. Cl. 144—34 E **9 Claims**

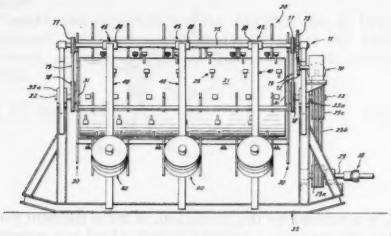


1. In a tree shear of the type including a main frame having a front side portion defining a surface adapted for engagement with a side of a standing tree trunk when the latter is being sheared, a pair of blade support arms pivotally connected to said main frame for swinging movement toward and away from each other about a common axis extending crosswise to said surface, the blade support arms including forwardly extending portions extending beyond the front side of the main frame for being positioned on opposite sides of a tree trunk engaged by the surface, a pair of cylindrically-curved, plate-like blades being respectively secured to the pair of blade support arms for movement therewith to shear a tree trunk positioned therebetween, blade operating linkage means connected between the main frame and the blade support arms and including an extensible and retractable hydraulic motor selectively operably for swinging the arms and thus the blades towards and away from each other, the improvement comprising: tree grappling means including a pair of opposed, curved grapple arms mounted on said main frame for movement about respective pivot axes extending parallel to each other and disposed vertically with respect to and being spaced equidistance from said common axis, said grapple arms further being located so as to be substantially at the same vertical height as said common axis is when the main frame is in an upright position wherein said surface is substantially vertically disposed.

3,862,653
LOG DEBARKING APPARATUS

Clinton K. Fay, 3315 Freshmeadows, Houston, Tex. 77042, and Neil H. Akkerman, 3502 Corondo Ct., Houston, Tex. 77005

Filed Feb. 8, 1974, Ser. No. 440,713
Int. Cl. B27l 1/00
U.S. Cl. 144—208 J 5 Claims

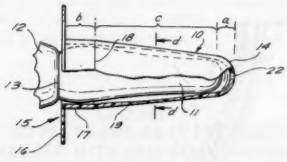


1. A log debarking apparatus comprising:
a. a drum;
b. drum support means, supporting said drum in a substantially horizontal relation;
c. a plurality of chain flails supported by said drum for striking the log upon rotation of said drum;
d. means for rotating said drum;
e. log support means rotatably mounted adjacent each end of said drum;
f. means for rotating said log support means;
g. curved log engaging means pivotally mounted adjacent said drum; and
h. means for urging said log engaging means toward said drum whereby a log engaged thereby is urged against said flails as said drum rotates.

3,862,654
FINGER PROTECTING AMPOULE CAP

Raymond Goldberg, East Meadow, and Irving F. Shaw, East Rockaway, both of N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

Filed Mar. 12, 1973, Ser. No. 339,777
Int. Cl. B65d 17/02
U.S. Cl. 150—52 R 9 Claims

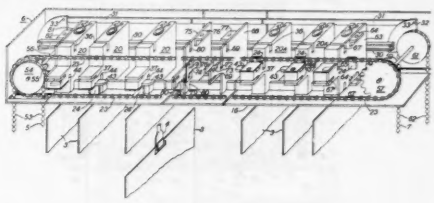


1. A finger protecting device for grasping the removable end of flame-seal ampoules in the opening thereof, said device comprising of elongated hollow flexible plastic body of generally conical contour having a rounded portion at least partially closing the smaller end thereof, the opposed larger end being completely open and integrally joining an outwardly extending circumferential planar flange with a diameter more than twice the diameter of said open end, the portion of said elongated body adjacent said flange, and for a distance equivalent to about one-third to two-thirds the diameter of said open end, being of cylindrical cross section and disposed perpendicularly to said flange, and the portion of said elongated body between said cylindrical portion and rounded end being of progressively reduced diameter and contoured to provide enhanced radial flexure of the walls thereof, thereby facilitating the firm grasping of an ampoule end disposed therein.

3,862,655
TRANSPORT MECHANISM FOR VERTICAL VENETIAN BLINDS AND DRAPES

John Knapper, 123 S. Broadway, Apt. 4A, Irvington-on-Hudson, N.Y. 10533

Filed Aug. 17, 1972, Ser. No. 281,473
Int. Cl. E06b 9/36, 9/388
U.S. Cl. 160—172 13 Claims



1. In a transport apparatus for vertical venetian blinds or drapes, having one or more sections, which comprises in combination, a horizontal support, movable carriers which move along the support and carry vertical vanes or drapes and moving means which engage the movable carriers and move the movable carriers along the support the improvement which comprises; providing a vertical venetian blind or drape which can be opened in either direction across a section without rearrangement of the apparatus by releaseably engaging at least the end movable carriers, in each section, with the moving means and providing stops, disposed at the limits of travel in the section to engage a movable carrier, releaseably engaged with the moving means, to release the engagement with the moving means as the movable carrier is moved into engagement with a stop.

3,862,656
METHOD AND APPARATUS FOR VACUUM CASTING OF METAL

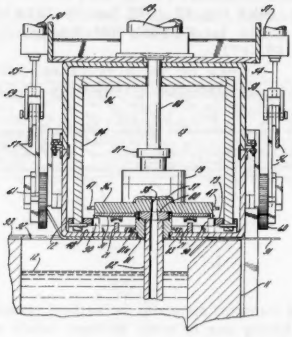
Donald J. Weiler; John H. Fritz, and B. Frank Lewis, all of Aurora, Ill., assignors to Aurora Metal Corporation, Aurora, Ill.

Filed Feb. 16, 1973, Ser. No. 333,070
Int. Cl. B22d 27/16
U.S. Cl. 164—63 5 Claims

1. A method of vacuum casting metal comprising the steps of:
a. forming a bath of molten metal;
b. immersing the lower end of a vertical sprue in said bath with the upper end of the sprue extending above the surface level of the bath;
c. providing a metal stripper plate having an aperture extending therethrough in fluid communication with the top of said sprue;
d. bringing a vacuum casting mold having an enlarged chill plate on the bottom thereof into fluid communication with said stripper plate;
e. pressing said mold toward said stripper plate to prevent the leakage of molten metal from the path of fluid communication between said mold, chill plate and stripper plate;
f. forming a vacuum chamber around said mold and withdrawing air therefrom to draw molten metal upwardly from said bath through said sprue, stripper plate and chill plate into said mold until said mold is filled;
g. solidifying the metal in the path of fluid communication through said stripper plate, chill plate and mold;
h. releasing the pressure of said mold and breaking the solidified metal between said chill plate and said stripper

plate by vertically separating said mold and chill plate from said stripper plate;

i. opening said vacuum chamber and removing said mold therefrom;



j. and ejecting any solidified metal remaining in said stripper plate and sprue into said bath of molten metal.

3,862,657

METHOD AND APPARATUS FOR CONTINUOUS CASTING OF METAL WITH A CONSIDERABLY LOWER SPECIFIC GRAVITY OF THE STRAND IN RELATION TO THE CAST METAL

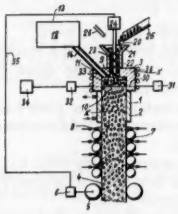
Armin Thalmann, Uster, Switzerland, assignor to Concast AG, Zurich, Switzerland

Filed July 20, 1973, Ser. No. 381,281

Claims priority, application Switzerland, July 27, 1972, 11245/72

Int. Cl. B22d *11/10*

U.S. Cl. 164—86 **21 Claims**



1. A method of continuously casting metals with a considerably lower specific gravity of the cast strand than that of the cast metal, wherein the metal and additive constituents are introduced into the liquid metal pool of the metal bath in a hollow molding compartment, the improvement comprising the steps of: introducing as the additive constituents porous bodies having a specific gravity which is less than 1, and exerting a pressure upon the porous bodies which at least corresponds to the magnitude of the buoyant force acting upon the porous bodies upon penetration into the metal.

3,862,658

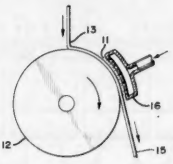
EXTENDED RETENTION OF MELT SPUN RIBBON ON QUENCHING WHEEL

John R. Bedell, Sparta, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed May 16, 1973, Ser. No. 360,888

Int. Cl. B22d *11/06*

U.S. Cl. 164—87 **8 Claims**



1. In a method for the production of metal filament from a molten source using a rotating quench wheel as a quenching element upon which a molten filament is deposited, the improvement which comprises prolonging the period of contact between the deposited filament and the quenching wheel by external means acting on said deposited filament, said external means being applied over an elongated portion of the deposited filament thereby preventing separation of the filament from the quench wheel, which would result from the centrifugal force of rotation of said wheel acting on said filament, until the quench temperature of the filament is achieved.

3. In an apparatus for the production of metal filaments by depositing a molten filament upon a rapidly rotating quenching wheel as a quenching element, the improvement which comprises applying an elongated external retaining means on said filament while it is being quenched on said rotating quenching wheel to extend the period of contact between the deposited metal filament and the quenching wheel.

3,862,659

METHOD AND APPARATUS FOR CONVEYING A STRAND THROUGH A CONTINUOUS CASTING INSTALLATION

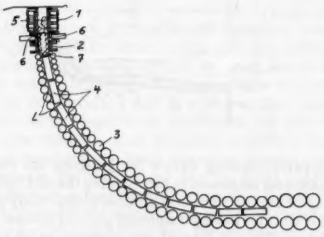
Willi Simons, Dusseldorf, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed May 29, 1973, Ser. No. 364,967

Claims priority, application Germany, May 29, 1972, 2226095

Int. Cl. B22d *11/08*

U.S. Cl. 164—250 **6 Claims**



1. In a continuous casting installation having a continuous casting mold and curved strand guide means, an apparatus for conveying a strand through the strand guide means by means of electro-motor force, said apparatus comprising linear motor means incorporating as the primary side windings extending substantially in the direction of the strand guide means, the strand located in the strand guide means forming the secondary side of the linear motor means, said windings being posi-

tioned in operable association with the narrow sides of the strand, and means for adjusting the windings in accordance with the momentary strand width.

3,862,660

DURABLE MOLD OF MULTILAYER CONSTRUCTION

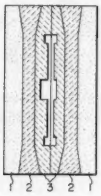
Koji Sakabe; Hideo Ito, and Nobuyuki Katura, all of Nishi, Japan, assignors to Sakabe Industry Co., Ltd., Aichi-ken, Japan

Continuation-in-part of Ser. No. 206,053, Dec. 8, 1971, abandoned. This application Feb. 11, 1974, Ser. No. 441,311

Claims priority, application Japan, Dec. 10, 1970, 45-109662

Int. Cl. B22c *9/00*

U.S. Cl. 164—349 **1 Claim**



1. A durable mold for casting molten metals comprising:
means to receive molten metal and in which said metal becomes solidified, which means comprises
a body portion defining a casting cavity, said body portion comprising
at least three different layers, each formed of a non-metallic refractory material having coefficients of thermal expansion decreasing from the external layer remote from the article to be molded to the internal layer closest to the article to be molded,
said internal layer consisting essentially of silicon carbide, the intermediate layers consisting essentially of mixtures of silicon carbide and chamotte and said external layer consisting essentially of chamotte, each of said layers further containing tridymite as an expansion controlling agent for controlling the coefficients of expansion in small amounts sufficient to control the coefficients of expansion at predetermined levels.

3,862,661

CORRUGATED PLATE FOR HEAT EXCHANGER AND HEAT EXCHANGER WITH SAID CORRUGATED PLATE

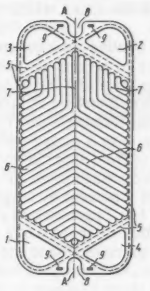
Leonid Maximovich Kovalenko, ulitsa Kirgizskaya, 3/7, kv. 31; Leonid Leonidovich Tovazhnyansky, ulitsa Chernyshevskogo, 45a, kv. 12; Leonid Petrovich Pertsev, ulitsa Otakara Yarosha, 61, kv. 167; Ostap Alexandrovich Korobchansky, ulitsa 23 avgusta, 57, kv. 76, all of Kharkov; Vladimir Sergeevich Chernonogov, ulitsa Alpinistov, 10, kv. 5, Sverdlovsk, all of U.S.S.R., and Vladimir Ilich Sytnik, deceased, late of ulitsa Malo-Belgorodskaya, 9b, kv. 79, Kharkov, U.S.S.R. (by Ljudmila Vladimirovna Sytnik, administratrix)

Filed Jan. 16, 1970, Ser. No. 3,316

Int. Cl. F28f *3/00*

U.S. Cl. 165—166 **4 Claims**

1. An oblong corrugated plate for heat exchangers, said plate having corrugations arranged symmetrically with respect to the longitudinal axis thereof and at an angle to said axis, at least a part of the corrugations at one end of the plate being



disposed essentially parallel to the longitudinal axis of the plate.

3,862,662

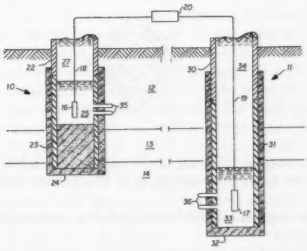
METHOD AND APPARATUS FOR ELECTRICAL HEATING OF HYDROCARBONACEOUS FORMATIONS

Loyd R. Kern, Irving, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 12, 1973, Ser. No. 424,103

Int. Cl. E21b *43/24*

U.S. Cl. 166—248 **25 Claims**



1. The method of electrically heating a subsurface formation situated between and immediately adjacent an upper and a lower layer each having a lower electrical resistivity than that of the formation comprising the steps of:
a. establishing a potential difference between a first and a second electrode means positioned respectively within the upper and lower layers and in electrical contact therewith and
b. causing an alternating current to pass between said electrode means responsive to said potential difference along a plurality of paths through said formation determined by the relative resistivities of said formation and said upper and lower layers.

3,862,663
METHOD FOR STABILIZING INCOMPETENT OIL-CONTAINING FORMATIONS

Beverly A. Curtice, Portsmouth, Va., and Bobby G. Harnsberger, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

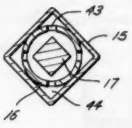
Filed Dec. 28, 1973, Ser. No. 429,428
Int. Cl. E21b *33/13, 43/02;* **C04b** *7/02*
U.S. Cl. 166—276 **11 Claims**

1. A method of treating an incompetent formation penetrated by a wellbore to prevent the movement of unconsolidated sand particles from said incompetent formation to the wellbore as formation fluids are recovered from said formation which comprises forming a first treating composition of 1 part cement, from 4 to 6 parts by weight of sand particles having a mesh size of from about 20 to about 40 mesh, 0.3 to 0.4 part of a blended refined lubricating oil fraction containing from about 1 to 7 percent by weight of sulfurized sperm oil and from about 1 to 7 percent by weight of lead naphthenate, from about 0.009 to about 0.002 part of an oil wetting agent to oil wet the particles of sand and cement, each per part by weight of cement, adding to said first treating composition from about 0.01 to about 0.04 part by weight of finely ground silica, per part of cement, to form a final treating composition, suspending the resulting treating composition in an aqueous carrier medium, placing said aqueous suspension against the unconsolidated formation, contacting the placed treating composition with an aqueous curing solution to water wet the cement particles, maintaining said curing solution in contact with the placed treating composition until a permeable cement barrier is formed between the formation and the wellbore whereby formation fluids can be recovered by passage through the formed permeable cement barrier.

3,862,664
EARTH BORING APPARATUS

Michael Skelly, Sherman, Tex., assignor to Reed Tool Company, Houston, Tex.

Filed Nov. 2, 1973, Ser. No. 412,473
Int. Cl. E21c *1/10*
U.S. Cl. 173—150 **5 Claims**



1. In a rotary drilling rig of the type having a kelly driver for rotating an axially advancing drill bit, a mast assembly comprising:

an outer non-rotatable barrel defining an elongated internal cylinder;

an intermediate elongated member slidable and rotatable within said outer barrel and comprising an outer kelly member having a non-circular cross-section adapted to be rotatably driven by the drilling rig, an inner cylindrical member secured within and rotatable with said outer kelly member, and means sealing adjacent ends of said outer kelly member and said inner cylindrical member, the exterior of the inner cylindrical member contacting the interior of the non-circular outer kelly member along the length thereof and defining elongated fluid passageways of angular section along the length of said intermediate member;

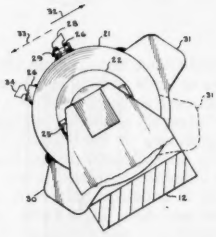
an inner kelly member slidable within said inner cylindrical member and adapted to be rotatably driven by said intermediate member; and

fluid means including said passageways adapted to extend said intermediate member out of said outer barrel and said inner kelly out of said intermediate member, and to retract said intermediate member into said outer barrel and said inner kelly into said intermediate member.

3,862,665
SCRAPE-TYPE CUTTER FOR DRILL BITS

Duane W. Wallace, Houston, Tex., assignor to Reed Tool Company, Houston, Tex.

Filed Oct. 11, 1973, Ser. No. 405,465
Int. Cl. E21c *13/00*
U.S. Cl. 175—383 **5 Claims**



1. A drill bit head including a plate member having a plurality of support saddles mounted thereon in spaced relation to one another, said saddles having spaced apart legs,

rolling cutters and at least one drag type cutter disposed in said support saddles with said drag type cutter being interchangeable with a rolling cutter, said drag type cutter including a body mounted for rotational movement on a shaft disposed between the legs of a saddle,

means on said body engagable with said saddle to limit the rotational movement thereof,

said body having cutting members mounted thereon and adapted to assume a first cutting position when the drill bit head is rotated in one direction, and

adapted to assume automatically a second cutting position when the drill bit head is rotated in an opposite direction.

3,862,666
SERVO CONTROL SYSTEM FOR FILLING MACHINE WEIGHT SETTING

Robert L. Muskat, Glenview; Robert H. Connors, Chicago; King L. Klopfenstein, Prospect Heights, and Michael S. Stachnik, Chicago, all of Ill., assignors to Triangle Package Machinery Company, Chicago, Ill.

Division of Ser. No. 249,506, May 2, 1972,. This application Nov. 2, 1973, Ser. No. 412,191
Int. Cl. G01g *19/52, 13/24, 13/00*
U.S. Cl. 177—50 **7 Claims**

1. A package filling and identification system comprising:

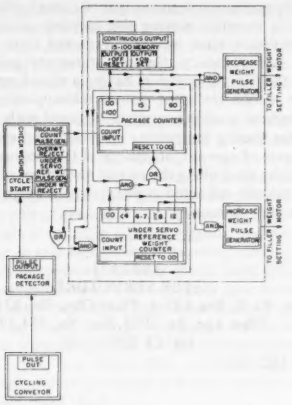
a. a plurality of fillers each adapted to dispense a charge of product to fill a package,

b. checkweighing means for the packages,

c. conveying means for delivering packages from said fillers to said checkweighing means, and

d. filler identification means including a stepper device responsive to each advancement of the conveyor,

whether or not a package has been delivered to and is being weighed by the checkweighing means, to identify



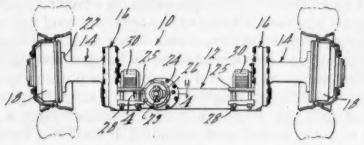
each said filler to maintain synchronization between the filler and the package then being checkweighed.

3,862,667

DROP CENTER DRIVE STEER AXLE

John Wolansky, Southfield, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Sept. 28, 1972, Ser. No. 293,204
Int. Cl. B60k *17/30*
U.S. Cl. 180—43 R **3 Claims**



1. A load bearing drive axle of the type adapted to journal steerable road wheel assemblies on its outboard ends, said axle comprising:

A. a rigid axle housing including

1. a pair of end section housings disposed about a substantially common axis,
2. a dropped center section housing substantially parallel to said common axis and defining a differential housing disposed below said common axis, and
3. a pair of gear housing sections rigidly connecting said dropped center section housing with said end section housings;

B. a spindle housing pivotally secured to each of said end section housings and spaced from the respective gear housing section by the length of said end section housing, said spindle housings adapted to rotatably support said road wheel assemblies and be pivoted in unison to steer said raod wheel assemblies;

C. a drive shaft positioned in each spindle housing and adapted to be secured at its outboard end to the respective road wheel assembly;

D. a drive shaft journaled in each of said end section housings;

E. drive means pivotally interconnecting the outboard end of each end section housing drive shaft and the inboard end of each spindle housing drive shaft;

F. two drive shafts journaled in said center section housing;

G. a gear set in each gear housing section and having first and second meshed gears drivingly connecting the outboard end of the respective center section housing drive shaft with the inboard end of the respective end section housing drive shaft; and

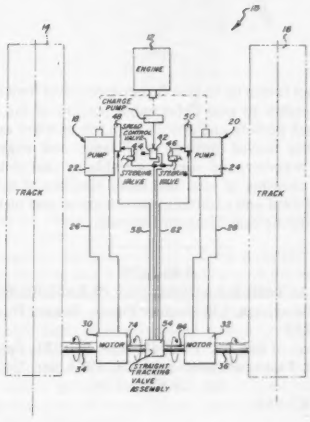
H. a differential gear assembly mounted in said differential housing and having a pair of output gears secured to the inboard end of the respective center section housing drive shafts and an input gear means adapted to be drivingly coupled to an input shaft.

3,862,668

HYDROSTATIC TRANSMISSION CONTROL SYSTEM

Harold R. Ward, Marshall, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed June 13, 1973, Ser. No. 369,468
Int. Cl. B62d *11/00*
U.S. Cl. 180—6.48 **30 Claims**



1. An apparatus comprising a first hydrostatic transmission for driving one track of a vehicle, a second hydrostatic transmission for driving another track of the vehicle, first and second movable valve members, first means for moving said first valve member at a speed which varies as a function of variations in the speed at which said first hydrostatic transmission drives the one track, second means for moving said second valve member at a speed which varies as a function of variations in the speed at which said second transmission drives the other track, and means for varying the speed at which at least one of said hydrostatic transmissions drives the associated one of said tracks in response to a variation in the speed of movement of one of said valve members relative to the other of said valve members.

3,862,669

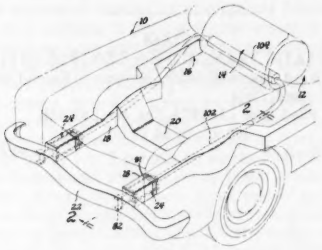
OCCUPANT RESTRAINT SYSTEM

Brook A. Lindbert, Utica; Wesley L. McCollum, Brighton, and Edward H. Mertz, Birmingham, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 24, 1972, Ser. No. 309,456
Int. Cl. B60r *21/08*
U.S. Cl. 180—91 **7 Claims**

1. The combination comprising, an automotive vehicle having an inflatable occupant restraint, a frame including a controlled mechanically deformable portion capable of absorbing higher level impact forces up to a higher force level limit, an impact member receptive of impact forces, a strut including a piston member movable within a cylinder member, means securing one of said members to said impact member and the other of said members to said deformable portion of

the frame to mount said impact member thereon, means operable upon movement of the piston member wihin the cylinder member for absorbing lower level impact forces received by the impact members, a shearable member engageable by the piston member to limit the range of movement thereof and set a lower level force absorption limit, said shearable member rigidifying said strut and being capable of transferring higher



level impact forces up to said higher force level limit from said impact member to said deformable portion of the frame to deform such portion and absorb such forces when said piston member has moved through said range and engages said shearable member, and means operable by said piston member upon shearing of said shearable member at said higher force level limit and additional movement of said piston member for inflating said occupant restraint.

3,862,670

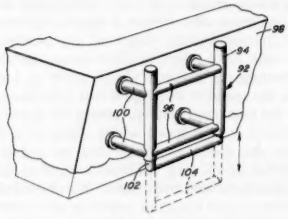
RETRACTABLE LADDER FOR PLEASURE BOATS

Cecil C. Hovey, Apt. 133 Mariner Pointe, Sextant Dr., Sanibel, Fla. 33957

Division of Ser. No. 179,049, Sept. 9, 1971, Pat. No. 3,774,720. This application Sept. 25, 1973, Ser. No. 400,692

Int. Cl. E06c *5/06*

U.S. Cl. 182—89 **5 Claims**



1. A boat ladder combined with a pleasure boat to facilitate a user getting into or out of a pleasure boat when in the water away from a dock and when on a transporting trailer or the like comprising a stationary section rigid with respect to the boat hull, a movable section movably mounted with respect to the stationary section for movement between extended and retracted positions, each of said sections including at least one transverse member defining a step with the step on the movable section being moved to a lower position below the boat hull when the movable section is in its extended position, and means interconnecting the stationary section and movable section to move said movable section in at least one direction of movement, said movable section being reciprocally mounted with respect to the stationary section for substantially vertical movement between extended and retracted positions, said stationary section including a pair of substantially vertically disposed guide members telescopingly engaged with portions of the movable section, said means moving the movable section in one direction including a spring member interconnecting the movable section and stationary section enabling movement of the movable section to an extended position when the weight of a user is placed thereon, said spring member moving the movable section to its retracted position when weight is removed from the movable section, said vertically disposed stationary guide members being in the form of cylinders having a closed upper end, said movable section including pistons telescopically movable in said cylinders, a spring member engaged with each of said pistons for biasing the pistons upwardly, and means controlling the rate of upward movement of the pistons in the cylinders thereby controlling the rate of movement of the movable section toward retracted position when weight is removed from the step thereon.

3,862,671

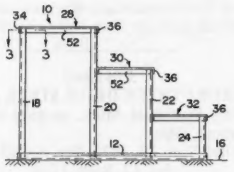
STEP STRUCTURE

Bud Parr, Rt. 2, Box 433-A, Plant City, Fla. 33566

Filed Apr. 26, 1973, Ser. No. 354,478

Int. Cl. E06c *1/02*

U.S. Cl. 182—132 **15 Claims**



1. A step assembly of the type primarily designed for providing access to a mobile home or like structure, said step assembly comprising: a support frame comprising step mounting means, step members mounted on said step mounting means, said step mounting means dimensioned to position said step members at different heights relative to a supporting surface; each of said step members integrally formed from a single piece of material and each including at least two tread portions integrally formed in said single piece of material, said tread portions disposed in spaced relation to one another by means of a solid step section integrally formed on said step member between said tread portions, each of said tread portions defined by a plurality of apertures formed in said step member and disposed in predetermined relation to one another.

3,862,672

QUICK-CHANGE DRIVE UNIT

Harold B. Tappen, and John Roy Corwin, both of Richmond, Ind., assignors to Eaton Corporation, Cleveland, Ohio

Filed July 12, 1973, Ser. No. 378,468

Int. Cl. F01m *11/02*; **F16h** *3/08*

U.S. Cl. 184—6.12 **8 Claims**

1. A quick-change drive unit comprising:

a housing having at least one open side and open forward and rearward ends and further including a first cavity adjacent said forward end, a second cavity adjacent said rearward end and a contiguous, transversely-extending middle wall portion inbetween said first and second cavities, said wall having upper and lower substantially parallel passages extending therethrough and communicating said first and second cavities with one another;

a front cover plate removable sealingly secured to said forward end, a rear cover plate removable sealingly secured to said rearward end, and a side plate removably sealingly secured to said open side;

an input shaft extending through said front cover, said first cavity, said lower passage and into said second cavity, and secured in said housing in a rotatable manner;

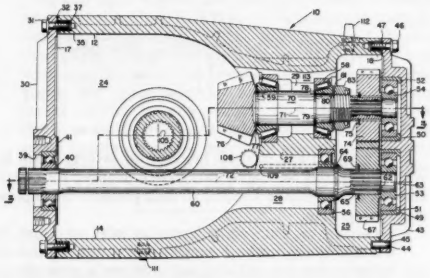
a selectively detachable first gear affixed to that portion of said input shaft within said second cavity;

a drive pinion shaft extending from said second cavity through said upper passage and into said first cavity, said drive pinion shaft secured in said housing in a rotatable manner;

a selectively detachable second gear affixed to that portion of said drive pinion shaft within said second cavity, said second gear in meshing, driving engagement with said first gear, removal of said rear cover plate providing easy access to said detachable gears for substitution with an alternate pair of detachable gears whereby the drive ratio of said unit is varied in a predetermined manner;

a drive gear in said first cavity in meshing, driving engagement with the pinion gear head of said drive pinion shaft; output means connected to said drive gear for transmitting rotation of said drive gear to an output member;

a first bearing in said front cover plate, a second bearing in said lower passage adjacent said second cavity and a third bearing in said rear cover plate, said first, second, and third bearings axially aligned with one another and journalling said input shaft;



a fourth bearing in said gear cover plate, a fifth bearing in said upper passage adjacent said second cavity and a sixth bearing in said upper passage adjacent said first cavity and spaced from said fifth bearing, said fourth, fifth, and sixth bearings axially aligned with one another and journalling said drive pinion; and lubricating means for lubricating the components of said unit, said lubricating means including;

said second bearing having a seal thereabout preventing said lower passage from providing fluid communication between said first cavity and said second cavity;

said housing having a fill opening at a side of said housing located at a point axially aligned with and communicating with a least a portion of said lower passage for filling said first cavity with lubricant;

a generally restricted levelling hole in said middle wall providing communication between said lower passage and said second cavity, said levelling hole generally aligned with said fill opening; and

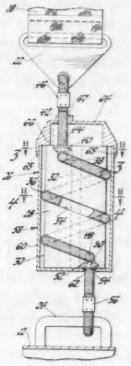
a first and second drain plug located in the bottom walls of said first and second cavities respectively whereby each of said cavities may be separately drained of lubricant without drainage of the other cavity.

3,862,673

SHOCK ABSORBING ATTACHMENT UNIT FOR A VEHICLE RESTRAINT BELT

James C. Benson, Rochester, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 23, 1973, Ser. No. 344,184
Int. Cl. F16f 7/12
U.S. Cl. 188—1 C **1 Claim**



1. A shock absorbing attachment unit for a vehicle body restraint belt comprising:

an elongated resilient member having a generally annular outer surface and a central metallic core providing rigidity to this member, the resilient member defining a groove along its outer surface extending generally between the opposite ends of this member with a generally helical configuration;

a flexible cable wrapped around the resilient member within the helical groove thereof so as to extend between the opposite ends of the resilient member with a generally helical configuration;

means adaptable to attach the respective ends of the cable to a fixed vehicle body portion and to an occupant restraint belt so that belt tension during a vehicle impact tensions the cable and resiliently deforms the resilient member to thereby lessen the shock a belted occupant is subjected to during the impact; and

an elongated cover of an annular configuration which receives the resilient member and the helical portion of the cable so as to conceal these components and thus provide the attachment unit with an aesthetically appealing appearance.

3,862,674

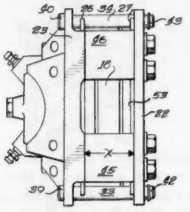
CALIPER DISK BRAKE HAVING EASILY REMOVABLE LININGS

John A. Vananrooy, St. Joseph, and Richard M. Kramer, Stevensville, both of Mich., assignors to Lambert Brake Corporation, St. Joseph, Mich.

Filed Apr. 9, 1973, Ser. No. 349,062
Int. Cl. F16d 65/02
U.S. Cl. 188—73.3 **2 Claims**

1. A disk brake for braking the rotation of a disk means, comprising a primary housing slidably mounted on a fixed foot at one side of the disk means, a brake piston disposed in a fluid powder chamber in the primary housing, a secondary plate disposed at an opposite disk means side, spacers of uniform cross-section interposed between the primary housing and secondary plate around the periphery of the disk means in spaced apart relation, the spacers being separable from the primary housing and from the secondary plate, bolts centered on a bolt circle of given radius extending at least partly

through the primary housing, completely through the spacer means and at least partly through the secondary plate to join the primary housing, the spacer means and the secondary plate in a rigid unit, the separable spacers having a length sufficient to space apart the primary housing and the secondary plate sufficiently to accommodate therebetween any combination of brake pads having a predetermined total thickness and a disk means of predetermined thickness the fluid power chamber being oriented to actively force the piston toward one disk means side and reactively force the primary housing away from the disk to draw the rigidly connected secondary plate toward the opposite disk side, a plurality of unthreaded cylindrical pins of smooth circular cross-sectional shape extending across the disk means between the



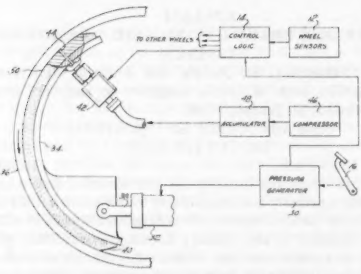
primary housing and secondary plate and mounted in holes of circular cross-section for quick sliding withdrawal therefrom at positions radially outside the disk means periphery but substantially on the bolt circle and circumferentially outside the spacers and bolts, a first brake pad interposed between the primary housing piston and one side of the disk means, a second brake pad interposed between the secondary housing and the opposite side of the disk means, both brake pads being provided with ears extending radially outwardly of the bolt circle and defining arcuate, opposed open-sided recesses opening outwardly away from said pads and said spacers to permit removal of the brake pads from the brake when a single pin is withdrawn from the housing and the brake pads, non-ear body portions of the pads being located radially inwardly of the bolt circle for contact with the brake disk means.

3,862,675

FLUID INJECTION ANTISKID BRAKE SYSTEM

Albert Blatter, Southfield, Mich.; John T. Kasselmann, and George B. Hickner, both of South Bend, Ind., assignors to The Bendix Corporation, Southfield, Mich.

Filed Aug. 15, 1973, Ser. No. 388,522
Int. Cl. B60t *8/08*
U.S. Cl. 188—181 R **30 Claims**



1. An antiskid brake system for a vehicle which receives operator commands and provides a fluid pressure braking signal indicative thereof and at least one fluid operated brake for a road engaging wheel of said vehicle, wherein said brake absorbs the kinetic energy of said vehicle by the frictional engagement of a surface on a rotational member associated with said road engaging wheel and a surface on a nonrotating member comprising:

means for sensing skidding between said wheel and said road;

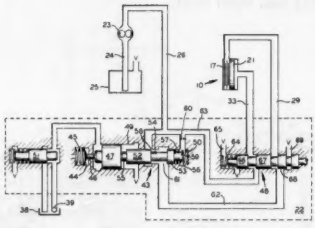
means responsive to said sensing means for injecting a fluid between the frictionally engaging surface on said rotating member and the frictionally engaging surfaces on said nonrotating member to decrease said frictional engagement.

3,862,676

CLUTCH CONTROLLED BY ENGINE SPEED AND TORQUE

Myron M. Schall, Toledo, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Feb. 28, 1974, Ser. No. 446,882
Int. Cl. F16d *43/284*
U.S. Cl. 192—.032 **4 Claims**



1. In a clutch and controls therefor for incorporation in a vehicle including an engine said clutch adapted for engagement by connection to a source of fluid pressure the improvement comprising:

a. a pressure regulator valve having an inlet, an outlet, and a means biasing said valve in a first direction wherein said valve is open and said inlet and outlet are in generally free communication;

b. a bellows member responsive to the vacuum in the manifold of said engine and adapted to bias said valve away from said first position increasingly as the load on said engine increases;

c. a pitot tube having an impact port located so as to sense engine speed and adapted to bias said valve away from said first position increasingly as the speed of said engine increases; and

d. a source of fluid for engaging said clutch and in communication with said inlet of said valve whereby when said valve is open said fluid flows through said valve and when said valve is closed said fluid provides a pressure to engage said clutch.

3,862,677

CLUTCH DISENGAGING AND BYPASSING ASSEMBLY

Norman G. Bahr, P.O. Box 1845, Grand Island, Nebr. 68801

Filed June 7, 1973, Ser. No. 367,899
Int. Cl. F16d *11/04, 47/02*
U.S. Cl. 192—48.4 **8 Claims**

1. An assembly for disengaging and bypassing a clutch assembly for transmitting rotation of an input shaft to an output shaft, the assembly comprising

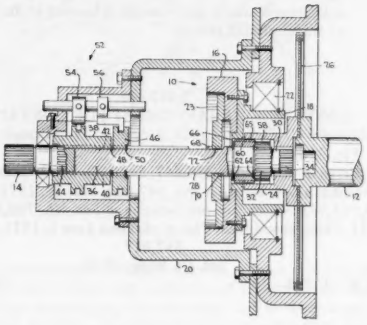
a rotatable, axially slidable shaft having input and output ends, and carrying first engaging means at said input end and second engaging means for coupling said slidable shaft with the clutch assembly;

output coupling means coupling said output end of said slidable shaft to the output shaft;

input coupling means rotatable with the input shaft carrying third engaging means for engaging said slidable shaft;

floating coupling means carried by said slidable shaft for coupling said input coupling means with the clutch assembly; and

means for selectively sliding said slidable shaft between a clutch engaged position and a clutch disengaged position, said second engaging means being coupled with said clutch assembly and said floating coupling means coupling said input coupling means with the clutch assembly when said slidable shaft is in said clutch engaged position, and said first engaging means carried by said slidable shaft engaging said third engaging means carried by said input coupling means, said floating coupling means disengaging the clutch assembly and said second engaging means carried by said slidable shaft disengaging the clutch assembly when said slidable shaft is in said disengaged position whereby the clutch assembly is bypassed when said slidable shaft is in said clutch disengaged position and does not rotate with said slidable shaft.



3,862,678

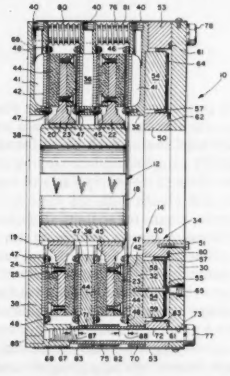
COOLED COUPLING WITH DISC STOPS

Marcus Howard Collins, Akron, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 2, 1973, Ser. No. 384,998

Int. Cl. F16d *25/04*

U.S. Cl. 192—88 A **10 Claims**



1. A fluid cooled, torque transmitting device comprising:

relatively rotatable first and second assemblies adapted to be coupled to one another when said device is actuated;

said first assembly including a radially extending disc member having an opening extending centrally therethrough and an annular gear member in splined engagement with said disc member about its exterior periphery whereby said disc member may move axially with respect to said gear member and said gear member adapted to receive and be keyed to a shaft member extending therethrough;

said second assembly including a relatively fixed end plate and a diaphragm type actuating member secured thereto, a relatively movable reaction member biased by said actuating member, and a relatively fixed reaction member spaced from said movable reaction member, said disc member extending between said reaction members; and said end plate and said reaction members having central apertures extending therethrough sufficient to receive said shaft;

said end plate and said reaction members being generally annular in configuration and having a like plurality of radially spaced, circumferentially orientated openings extending therethrough, said openings positioned outboard said disc member, a like plurality of tube-type spacers extending through said openings in said movable reaction member and positioned between opposing end faces of said fixed reaction member and said end plate, and a like plurality of bolts extending through said spacers for permanently clamping said spacers between said fixed reaction member and said end plate,

a first spring carried on each one of a plurality of first selective spacers and positioned between said fixed and movable reaction member for biasing said diaphragm to a return position; and

a stop tube received over each one of a plurality of second selective spacers, each stop tube located between said reaction members and having a predetermined axial length shorter than the length of its associated spacer to restrain movement of said movable reaction member after said movable member has reached a predetermined travel.

3,862,679

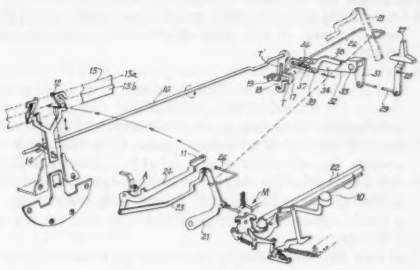
POWER OPERATED TYEPWRITER WITH MEANS FOR ERROR CORRECTION

Chester E. Ozimek, Park Ridge, and Kenneth L. Eldridge, Jr., Naperville, both, Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.

Filed Sept. 18, 1973, Ser. No. 398,532

Int. Cl. B41j *29/36*

U.S. Cl. 197—181 **1 Claim**



1. In a power operated typewriter comprising character printing mechanism including printing control keys operatively connected to type bars, key controlled power means, paper support mechanism, spacing means including an escapement arch operatively engageable by said type bars for stepwise moving said paper support mechanism in a forward direction to accomplish printing a line of characters, a ribbon providing a printing field and a print obliterating field, a rib-

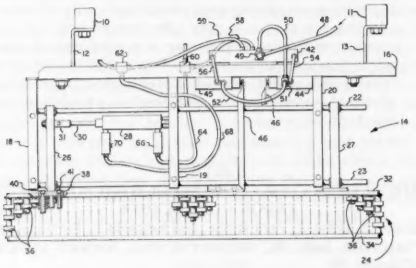
bon vibrator, a feed arm operatively connected to said ribbon vibrator and actuated by the printing control keys to guide said ribbon to bring a ribbon field momentarily in impressing position, backspace drive means for stepwise moving said paper support mechanism in a backward direction in letter width increments, the improvement which comprises a manual key operatively connected to a special type bar carrying a universal obliterating type font, said type font being controlled by said manual key to impinge on said ribbon, said special type bar being free of any engagement with said escapement arch whereby actuation of said manual key will not effect movement of said paper support mechanism, link means operatively connecting said feed arm to said special type bar for moving said feed arm independently of any movement effected by the actuation of any of said printing control keys, said feed arm having a slot permitting movement of the feed arm beyond the movement effected by the actuation of any of said printing control keys, said special type bar when actuated by said manual key moving said feed arm and effecting elevation of said ribbon vibrator to position the print obliterating field in impressing position to be impinged upon by said type font to obliterate a character imprinted in error.

3,862,680

ARTICLE ALIGNMENT APPARATUS AND METHOD

John R. Johnson, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 15, 1973, Ser. No. 388,632
Int. Cl. B65g *47/26*
U.S. Cl. 198—30 **5 Claims**



1. Apparatus for separating a mass of articles conveyed in random fashion by a conveying means into at least one ordered, single file of articles comprising, in combination:

a first linearly movable article guide means positoned in the path of travel of said mass of articles for guiding said articles;

a second linearly movable article guide means for guiding said articles positioned adjacent to said first article guide means, the transverse separation of said first and second article guide means decreasing from an inlet adjacent said mass of articles to an outlet remote from said mass of articles, the separation at said outlet being such that only one article at a time may pass therethrough, said first and second movable article guide means each comprising:

a fixed support frame suspended above said conveying means;

at least one longitudinally extending rail attached to said support frame;

an elongated article engagement member slidably mounted on said rail for linear, reciprocal movement along said rail;

an upper spacer plate;

a lower spacer plate; and

a plurality of rotatably mounted wheel members extending between said upper and lower spacer plates with their axis of rotation extending between said upper and lower spacer plates, said plurality of wheel members being repeated in a series of said wheel members extending substantially the entire longitudinal dimension of said article egagement member;

drive means for reciprocating said first and second article guide means; and

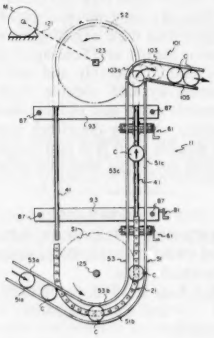
control means, connected to said drive means, for setting the direction of movement of said first article guide means in the direction of travel of said articles when said second article guide means is moving counter to the direction of travel of said articles and for setting the direction of movement of said first article guide means counter to the direction of travel of said articles when said second article guide means is moving in the direction of travel of said articles.

3,862,681

CONVEYING ARRANGEMENT FOR CONTAINERS

Maynard C. Barker, 10906 Ridgedale Rd., Temple Terrace, Fla. 33617

Division of Ser. No. 288,447, Sept. 12, 1972, abandoned, which is a division of Ser. No. 147,682, May 28, 1971, Pat. No. 3,703,953, which is a continuation of Ser. No. 788,136, Dec. 31, 1968, abandoned. This application June 4, 1973, Ser. No. 367,017
Int. Cl. B65g *47/00*
U.S. Cl. 198—50 **36 Claims**



1. A chain conveyor arrangement for conveying a plurality of containers such as cans arranged in a line comprising two endless articulated chains each being formed of a plurality of links, a plurality of associated conveying caps secured to the links of each chain to define two sets of caps, said caps being mounted on said chains with the caps secured in fixed relationship thereto, means for spacing said chains in substantially parallel relationship along a conveying run thereof, means for moving the chains along said conveying run, said sets of caps facing one another and being spaced apart, each of said caps having a conveying surface opposite said chain and which is unidirectionally tapered in the longitudinal direction of said chain to form a generally sawtoothed discontinuous conveying surface for conveying a plurality of containers arranged in a line, said caps further having oppositely outer faces, and corresponding associated guides engaging oppositely outer faces of said caps and maintaining said chain and associated caps in substantially parallel path spaced relation along and on opposite sides of a desired first article-conveying path.

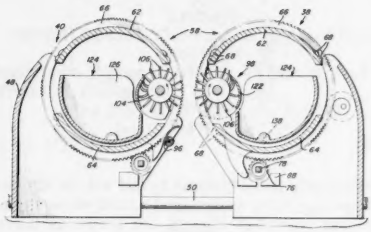
3,862,682
MEAT HANDLING EQUIPMENT

Herman F. Russell, Detroit, Mich., assignor to Hobart Corporation, Troy, Ohio

Division of Ser. No. 177,302, Sept. 2, 1971, Pat. No. 3,781,936, which is a continuation-in-part of Ser. No. 877,229, Nov. 17, 1969, Pat. No. 3,606,628. This application May 18, 1973, Ser. No. 361,787

Int. Cl. B65g *45/00*; **A22c** *17/08*

U.S. Cl. 198—229 **9 Claims**



1. For use in a meat cleaning machine, a meat gripping and moving cylinder comprising a plurality of gripping rings, each ring having a meat engaging outer edge and an inner edge of a common diameter, mounting members extending transversely of said rings and slidably supporting edges of the rings, at least one of said members having an arcuate surface coextensive with part of an edge of each ring to locate the rings on a common axis and to constrain the rings from shifting to an eccentric position, and means separating said rings in laterally spaced relation to each other.

3,862,683
CONTAINER FOR INDIAN INK DRAWING DEVICES

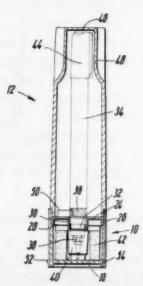
Harald Koelichen, Geretsried, Germany, assignor to Standardgraph Filler & Fiebig GmbH, Geretsried, Germany

Filed Jan. 24, 1973, Ser. No. 326,535

Claims priority, application Germany, Feb. 14, 1972, 2206938

Int. Cl. A45c *11/00*; **B65d** *85/28*

U.S. Cl. 206—207 **14 Claims**



1. A container for one ink pen for retaining moisture at the nib of the pen, said container comprising:

an enclosed lower portion; said lower portion having a bottom; a plate defining the upper side of and enclosing said lower portion; an opening through said plate into said lower portion; said opening being sized to support and to be closed by a pen nib inserted therein; said lower portion being of a height such that a pen nib supported by said plate has its inking portion projecting down through said lower portion almost to said bottom; said lower portion having a width sufficient to define an airspace around a pen nib inserted through said plate opening, and a porous liquid carrying means extending around said airspace but not beneath the inserted nib;

a sleeve lid for the pen, extending above said container lower portion and being shaped inside said lid to receive the pen inserted in said plate; support means in said lid for engaging the shank of the inserted pen and for supporting same against both axial motion and radial motion.

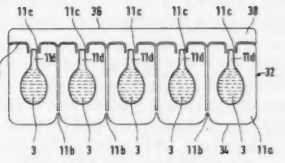
3,862,684
ASEPTIC PACKING CONTAINER AND METHOD OF MAKING AND FILLING IT

Roland Schmitt, Forchheim, Germany, assignor to Industriewerke Karlsruhe-AugsburgAktiengesellschaft, Karlsruhe, Germany

Division of Ser. No. 227,577, Feb. 18, 1972,. This application Jan. 5, 1973, Ser. No. 321,255

Int. Cl. B65d *75/40*, *83/00*

U.S. Cl. 206—277 **4 Claims**



1. A one time use package comprising a container having a body portion, an elongated mouth extending outwardly from said body portion, said container comprising two superposed sheets, each sheet having a container half portion in the indentation forming a half of said body portion, said sheets extending on each side of said body portion and being welded together at their areas external to said body portion and being welded above said mouth to seal the top of said mouth and close it, in a break line defined on said sheets extending on each side of said mouth along substantially straight lines at a spaced location from the top of said mouth and terminating in downwardly extending portions extending in close proximity to each side of the mouth of said body portion at the level of the top of said mouth, said break lines being tearable to effect tearing along a smooth, straight line at a spaced location above the top of said mouth up to each side of said mouth and then downwardly to the plane of the top of said mouth so that any rough tearing across the top of said mouth is recessed from the smooth tear edge lines.

3,862,685
FLEXIBLE NAIL STRIP

Ronald J. Mosetich, Glen Ellyn, and Joseph Mosetich, Lake Bluff, both of Ill., assignors to Duo-Fast Corporation, Franklin Park, Ill.

Division of Ser. No. 90,688, Nov. 18, 1970, Pat. No. 3,729,885. This application Jan. 26, 1973, Ser. No. 326,742

Int. Cl. B65d *83/00*

U.S. Cl. 206—344 **7 Claims**

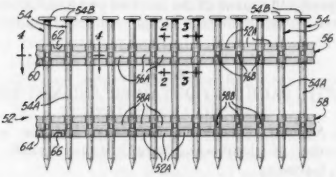
1. A strip of spaced and elongated fasteners that is both flexible to permit coiling and folding and possesses some resistance to lengthwise applied forces of compression comprising

a plurality of fasteners disposed in generally spaced and parallel positions,

a pair of flexible and elongated tape-like elements disposed opposite each other on opposite sides of the elongated fasteners spaced from the ends thereof,

and a layer of adhesive material disposed between the elements and joining the elements to each other and joining

the elements to the fasteners into a single joined strip including spacing sections between the fasteners formed by the face-to-face joined elements and openings between the spacing sections in which the fasteners are secured, the portions of the joined elements forming the spacing section having opposed offset areas spaced inwardly from



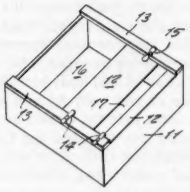
the edges of the elements and extending longitudinally with respect to the elements to define a longitudinally extending cavity between the fasteners filled with the adhesive material, said adhesive material between the fasteners extending to and in direct contact with said fasteners whereby the elements are joined together.

3,862,686

POWER SAW UTILITY CASE

John P. Kolarik and George Spector, both of c/o 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Sept. 5, 1972, Ser. No. 286,218
Int. Cl. B65d *85/54*; A47b *3/08*
U.S. Cl. 206—349 **3 Claims**



1. A power saw utility case comprising a bottom, a plurality of transverse upstanding sides and means affixed to the top of said sides for retaining a saw base within the case, said means including panel for supporting a saw spaced from and spanning a portion of said bottom providing openings between the sides and said panel, said means further including a pair of spaced bars, spaced from and adjustably overlying respective sides and the base mounted on clamping units projecting upward from said sides to points above said bars including clamping nuts above said bars.

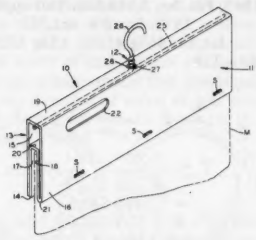
3,862,687

MERCHANDISE PACKAGING DEVICE

Edward Pirman, Wadsworth, Ohio, assignor to Pretty Products, Inc., Coshocton, Ohio

Filed Oct. 29, 1973, Ser. No. 410,633
Int. Cl. B65d *47/32*; G09f *5/04*
U.S. Cl. 206—527 **8 Claims**

1. A merchandise packaging device comprising
a package body formed from a unitary sheet of paperboard folded into inner and outer body elements disposed in telescopically interfitting relationship, each of said body elements being of an elongated, U-shaped channel configuration open at each end having spaced side panels and a web interconnecting the respective side panels, said side panels of each body element disposed adjacent to a respective side panel of the other body element with one pair of adjacently disposed side panels integrally formed along one edge thereof, and
a rigid hanger assembled with said package body, said rigid hanger including an elongated element disposed interiorly of at least said first body element and extending



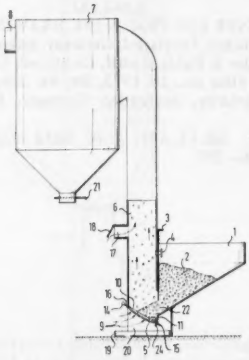
longitudinally thereof relative to said web for support of said package body thereon, and a hook element formed with said elongated element and projecting laterally therefrom for suspending the packaging device from a support.

3,862,688

PNEUMATIC FRACTIONATING APPARATUS

Harold Terhorst, Emmerich, Germany, assignor to Probat-Werke von Gimborn & Co. K.G., Emmerich, Germany

Filed Mar. 16, 1973, Ser. No. 342,061
Claims priority, application Germany, Apr. 27, 1972, 2220785
Int. Cl. B07b *4/08*
U.S. Cl. 209—139 R **14 Claims**



1. Apparatus for fractionating particulate material comprising, in combination:
a. a support;
b. a conduit mounted on said support in a position which is upright in the operative condition of the apparatus,
1. said conduit having an axis and an axial wall circumferentially bounding an axial bore in said conduit,
2. said bore having axially terminal top and bottom portions bounded by respective upper and lower terminal parts of said axial wall,
3. said axial wall being formed with an opening spacedly adjacent said lower terminal part thereof;
c. an end wall formed with a multiplicity of apertures and inclined relative to said axis,
1. said end wall downwardly bounding said bottom portion in said operative condition;

2. the lowermost portion of said end wall and said lower terminal part bounding a pocket extending downward from said opening;

d. feeding means for feeding the particulate material to be fractionated to said opening;

e. a collecting vessel communicating with said top portion; and

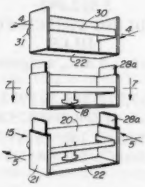
f. pressure means for passing a stream of fluid through said apertures into said bore, and through said bore into said collecting vessel.

3,862,689

INTERLOCKING CONTAINER FOR VERTICAL DISPLAYS

Ronald Taub, Highland Park, Ilk, assignor to Taub Family Trust U/A, Chicago, Ill.

Filed Dec. 29, 1972, Ser. No. 319,903
Int. Cl. A47f *5/10, 7/28*
U.S. Cl. 211—126 **12 Claims**



1. A tray-like shipping and display container comprising sheet material and constructed from a unitary, planar, one-piece blank, said container being open upwardly and forwardly and adapted for stacking in a vertical tier, each container comprising:

a rear wall, a pair of opposed end walls, and a floor, said rear wall, said end walls and said floor all being interconnected along fold lines of said blank,

said rear wall having formed therein a pair of laterally spaced, vertically extending through openings adjacent junctures of said rear wall with said end walls; and

an elongated article-retaining band, opposed ends of said band being adapted for engagement within said openings to fasten said band to said rear wall, said band paralleling said floor of said container and extending laterally across and being spaced from said rear wall to hold in place articles contained in said container, and

means for intercoupling said container as a first container in a secured, vertically stacked array of containers, said means comprising a member including at least one of a web means and slot means, said member being adapted to interengage wit a cooperating member of a vertically adjacent container in said array, to maintain the containers of said array in fixed alignment with one another.

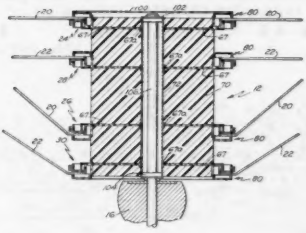
3,862,690

DISPLAY RACK HAVING A MOLDED HANGER ASSEMBLY BODY AND HANGER SUPPORTS

Maurice Cohen, 3580 N.W. 52nd St., Miami, Fla. 33142

Filed May 14, 1973, Ser. No. 359,884
Int. Cl. A47f *5/02*
U.S. Cl. 211—165 **20 Claims**

1. A display rack, comprising a base, a hanger assembly mounted on said base and including a circular hanger support ring molded of a plastic material, a plurality of openings formed in a circular array in said hanger support ring, a plurality of hangers mounted on said hanger support ring and being received in said openings in spaced apart, angular relation for pivotal movement thereon, means secured to said hanger support ring for locking said hangers in pivotal relation thereon, a plurality of elongated flexible tabs secured to said hanger support ring and extending in an outward direction thereon in spaced apart, angular relation, a projection joined to each of said flexible tabs and being spaced from projections formed on adjacent tabs, each of said hangers normally extending between a pair of said tabs and being positively retained therebetween by the projections on said adjacent tabs, wherein pivotal movement of selected hangers causes each of said selected hangers to ratchet over the projections on adja-



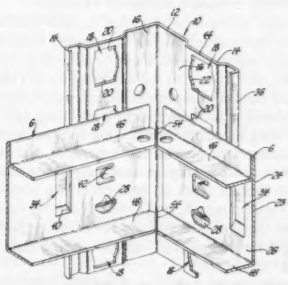
cent tabs for location between the next pair of adjacent tabs, the projections on said tabs positively locating said selecting hangers in the pivoted positions thereof and isolating an unpivoted hanger that has been retained in the normal position thereof, wherein the pivotally moved hangers are positively retained in their pivoted position apart from the isolated hanger, thereby providing for easy loading or removal of a garment on or from said isolated hanger.

3,862,691

LOCK SPAN SHELVING

Jack K. Mori, and Michael J. Duly, both of Kalamazoo, Mich., assignors to Lear Siegler, Inc., Kalamazoo, Mich.

Filed June 1, 1973, Ser. No. 365,940
Int. Cl. A47f *5/10*
U.S. Cl. 211—176 **7 Claims**



1. A storage rack assembly comprising: a post of sheet metal or the like having at least one supporting wall with a front face and a back face; a plurality of slots in said supporting wall spaced from each other along the length of said post; a one-piece beam of sheet metal or the like having a web portion with a front face; a pair of integral load carrying tabs struck from the web of the beam and projecting from the front face of said beam and spaced from each other in a direction transverse to the length of said beam, each of said load carrying tabs being received in one of the slots in said post such that said beam extends transversely of said post; and an integral projection on the front face of said beam engaging an edge of the supporting wall of said post, said projection extending from said front face of said beam a distance greater than said load carrying tabs, said projection being struck from the material of said beam, and further including anti-lift means formed

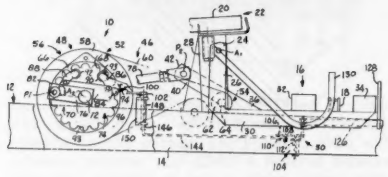
integrally on said beam engageable with said post to prevent disengagement of said load carrying tabs from said slots.

3,862,692

MECHANICAL FIRST TABLE DRIVE ASSEMBLY FOR A BALE WAGON

Gene R. Butler, Kingsburg, Calif., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Sept. 4, 1973, Ser. No. 394,373
Int. Cl. B65g 60/00
U.S. Cl. 214—6 B **3 Claims**



1. An improved bale wagon of the type which includes a chassis, a first table pivotally mounted on said chassis and capable of receiving a predetermined number of bales thereon and capable of being pivotally moved forwardly and reversely along a path of revolution defined about an axis along which said first table is pivotally mounted on said chassis between a lower, substantially horizontal, bale-receiving position and an upper, substantially vertical, bale-discharge position, and a second table mounted on said chassis and capable of receiving said bales from said first table when said first table is at its bale-receiving position, wherein the improvement comprises: a mechanical drive assembly mounted on said chassis for pivotally moving said first table forwardly and reversely along its path of revolution between its said positions, said assembly including

a driving input component capable of being coupled to an external source of rotary power, such as a power takeoff of a tractor, and continuously rotatably driven thereby at a substantially constant rotational velocity,

a driven output component coupled to said first table and capable of being inoperatively uncoupled from said driving input component and capable of being operatively coupled to, and driven by, said driving input component, said driven output component when operatively coupled to said driving input component translating said rotation of said driving input component into reciprocatory movement to cause said pivotal movement of said first table through one complete cycle forwardly along said path of revolution thereof from its bale-receiving position to its bale-discharge position, and reversely along said path of revolution thereof back to its bale-receiving position, for each single rotational cycle of said driving input component, and

a control component capable of maintaining said driven output component inoperatively uncoupled from said driving input component prior to each time said bales have been received on said first table at its bale-receiving position and capable of allowing operative coupling of said driven output component to said driving input component during only a single rotation cycle thereof each time after said bales have been received on said first table for pivotally moving said first table through only one complete cycle, said driven output component when operatively coupled to said driving input component for said single rotation cycle thereof imposing a relatively low average angular velocity on said first table during an initial portion of its pivotal movement forwardly along said path of revolution from its bale-receiving position to its bale-discharge position, a relatively high average angular velocity on said first table during an intermediate portion of its pivotal movement forwardly along said path of revolution from its bale-receiving position to its bale-discharge position and a relatively low average angular velocity on said first table during a final portion of its pivotal movement forwardly along said path of revolution from its bale-receiving position to its bale-discharge position,

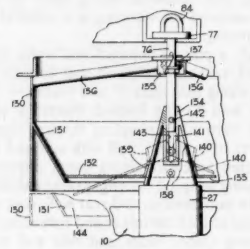
whereby said bales being carried by said first table are imparted with an increasing momentum, and thereby maintained at rest in a desired arrangement on said first table substantially as received thereon, during said initial and intermediate portions of said first table pivotal movement forwardly along said path of revolution from its bale-receiving position to its bale-discharge position and are imparted with a decreasing momentum, and thereby deposited on said second table in said arrangement, during said final portion of said first table pivotal movement forwardly along said path of revolution when said first table reaches its bale-discharge position.

3,862,693

MATERIAL HANDLING SYSTEM FOR VIBRATORY MILLS

John R. Strom, Fullerton, Calif., assignor to Sweco, Inc., Los Angeles, Calif.

Division of Ser. No. 253,272, May 5, 1972, Pat. No. 3,810,585, which is a continuation of Ser. No. 825,860, May 19, 1969, abandoned. This application July 25, 1973, Ser. No. 382,375
Int. Cl. B65g 65/32
U.S. Cl. 214—17 C **5 Claims**



1. A hoist pan for evenly dumping material into the chamber of a vibratory mill comprising

a substantially cylindrical housing,

a central core member,

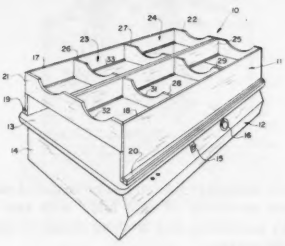
a plurality of arms interconnecting said housing and said core member, said central core member being freely supported by said plurality of arms,

a pair of hinged bottom segments retained centrally on said core member and retained at the outer edges thereof normally by said housing, said segment members being adapted to be released and folded downwardly for dumping the contents of said hoist pan, said bottom segments being hinged together and freely mounted on said core member, said core member being substantially frustoconical and tapering inwardly from the bottom thereof, the outer edges of said segment members normally being retained by an inclined wall portion near the bottom of said housing, engagement of the bottom of said core member with said mill allowing said bottom segment members to open by moving upwardly with respect to said core member and pivotting to dump media into said mill.

3,862,694
METHOD FOR REMOVING ARTICLES FROM ENVELOPES

David W. Gernetzke, Novato, Calif., assignor to Wells Fargo & Company, San Francisco, Calif.

Division of Ser. No. 283,547, Aug. 24, 1972,. This application May 28, 1974, Ser. No. 473,401
Int. Cl. B65b *21/02*
U.S. Cl. 214—152 4 Claims

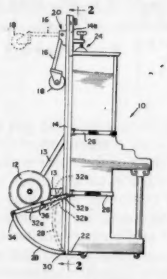


1. A method for removing articles from within an envelope having opposite planar side walls joined together along common peripheral edge portions thereof, said envelope being open along at least additional common peripheral edge portions of said side walls, including the steps of supporting said envelope in a substantially vertically extending plane with said open edge portions disposed lowermost, and imparting vibratory motion to said envelope to cause its planar side walls to move apart whereby said article moves downwardly from said envelope through said open edge portions.

3,862,695
PIANO LOADING TRAILER

Carl E. Elliott, 716 S. Capitol Ave., Indianapolis, Ind. 46225

Filed May 8, 1974, Ser. No. 467,862
Int. Cl. B60p *1/04*
U.S. Cl. 214—374 8 Claims

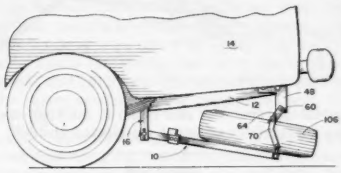


1. For pulling with a conventional road vehicle, a trailer comprising a frame providing a horizontally extending bed having a rear edge portion and forward edge portion, a pair of ground engaging wheels for supporting said frame, said wheels being coaxially disposed intermediate the end portions of said frame, a tongue extending forwardly from said frame to connect with such a vehicle, and a rocker assembly mounted on the rear edge portion of said frame, said rocker assembly including at least one arcuate rocker having an extended use position and a retracted storage position, each said rocker, in its use position, extending arcuately downwardly from the rear edge portion of said bed and forwardly toward the points of engagement of said wheels with the ground, and means for holding each rocker alternately in its use and storage positions, said rockers being disposed, in their use positions, to support said frame bed for pivotal movement between its said horizontal position and a vertical position.

3,862,696
TIRE CARRIER

Willard Mack McCauley, Rt. 1, Box 230, Okolona, Ark. 71962, and Harvey Wayne McCauley, 104 Kathryn St., Prescott, Ark. 71857

Filed June 4, 1973, Ser. No. 366,851
Int. Cl. B62d *43/04*
U.S. Cl. 214—454 5 Claims



1. A tire carrier apparatus for use in conjunction with a vehicle undercarriage and comprising first bracket means secured to the undercarriage of the vehicle; a carriage frame pivotally secured to said first bracket means for carrying a tire thereon; second bracket means secured to the vehicle undercarriage and spaced from said first bracket means; said second bracket means comprising a pair of spaced brackets disposed on a line which is substantially parallel to the axis of rotation of the pivotally mounted frame; an operator rod rotatably connected to both said brackets for rotation about an axis parallel to said axis of rotation of said frame; a pair of spaced crank arms rigidly secured to said operator rod, one said crank arm being disposed adjacent to each of the spaced brackets; a pair of spaced bell cranks, one said bell crank being pivotally connected between one crank arm and one side of said frame, the other said bell crank being pivotally connected between the opposite crank arm and the opposite side of said frame; and means for rotating the operator rod to raise and lower the free end of the frame; the end of said apparatus providing an open tire-receiving aperture which is formed by the spaced bell cranks and crank arms on the sides, the operator rod above and the frame below when said frame is lowered; said aperture being closed by said operator rod when said frame is raised.

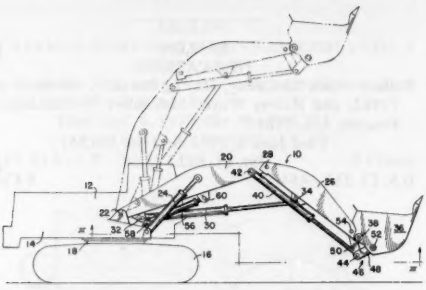
3,862,697
FRONT LOADING HYDRAULIC EXCAVATOR

Stephen H. Gill, Aurora; Harvey A. Knell, Joliet, and Joseph M. Tucker, III, Aurora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 24, 1972, Ser. No. 283,621
Int. Cl. E02f *3/86*
U.S. Cl. 214—763 7 Claims

1. A hydraulic excavator, comprising:
a vehicle having a mobile carriage and a rotary platform supported on said carriage;
a boom pivotally supported at one end on said rotary platform for movement about a horizontal axis;
a stick pivotally connected at one end to the outer end of said boom;
a bucket pivotally connected to the other end of said stick;
a hydraulic jack pivotally connected at one end to said boom inboard of said stick and at the other end to operate said bucket, said jack and said stick together with said boom and said bucket forming a four bar linkage;
means including a master cylinder operatively connected to be operated by said boom, and

means operatively communicating pressurized fluid from said master cylinder to said bucket jack in response to



pivotal movement of said boom to maintain said bucket in a substantially constant preselected attitude.

3,862,698

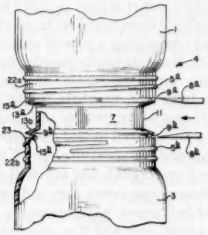
BLOW MOLDED ARTICLE OF MANUFACTURE

Robert X. Hafele, Overland Park, Kans., assignor to Ethyl Development Corporation, Kansas City, Mo.

Filed June 1, 1973, Ser. No. 365,954

Int. Cl. B65d *1/02*

U.S. Cl. 215—1 C **14 Claims**



1. A hollow, plastic, blow-molded, integrally formed article of manufacture comprising two normally open-mouthed containers and a waist ring, said containers each having a cylindrical neck portion which has an outwardly projecting, helical thread on its exterior surface and said waist ring connecting the two containers at their mouths so that the mouths are adjacent and opposite and so that each connection is by means of an annular, inwardly extending groove.

3,862,699

CAP SECURING MEANS FOR A CONTAINER

William W. Wetzell, 803 Saxony Rd., Encinitas, Calif. 92024

Filed Dec. 13, 1973, Ser. No. 426,703

Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*

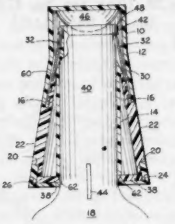
U.S. Cl. 215—216 **8 Claims**

7. The improvement in securing means for a cap closing the mouth of a container and engaging the end portion of the container adjacent to said mouth, comprising:

a. said container having annular engageable means on said end portion,

b. said cap having a latch which has a latching means and is movably mounted in said cap, said latch being manually movable between a first normal position in which said latching means is disposed to engage said engageable means as it passes the area of said engageable means and a second position in which said latching means is disposed not to engage said engageable means as it passes the area of said engageable means, and

c. said container having means forming a depression on its outer surface, said latch having an abutment normally preventing movement of said latch from said first position to said second position of said latch by abutting the outer surface of said container except when said abutment of said latch is clocked into position aligned with said de-



pression, whereby said cap can be removed only by aligning said abutment of said latch with said depression thereby permitting said latching means to pass said engageable means.

3,862,700

LOW TEMPERATURE LIQUIFIED GAS STORAGE TANK

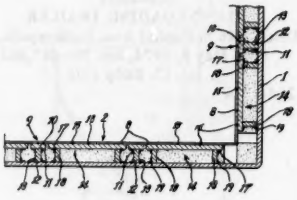
Tetsuo Noma; Osamu Nagao, and Ichizu Okano, all of Osaka, Japan, assignors to Hitachi Shipbuilding and Engineering Company, Ltd., Osaka, Japan

Filed July 7, 1972, Ser. No. 269,568

Claims priority, application Japan, Sept. 11, 1971, 46-70699

Int. Cl. B65d *25/00;* **E04b** *1/76*

U.S. Cl. 220—15 **8 Claims**



1. A low temperature liquified gas storage tank having a rigid outer wall, a low temperature resistant, liquid-tight inner wall spaced inwardly of the outer wall, and a heat insulating material between the outer and inner walls, wherein:

the inner wall comprises a plurality of rectangular barrier members interconnected to form junctions between adjacent ones of said barrier members;

coupling joists are attached to said outer wall and are arranged in a rectangular checkerboard pattern with each rectangular area thereof corresponding in size to a single barrier member;

rectangular box-like pressure pads are arranged so that each pressure pad is in one of the rectangular areas defined by said coupling joists, said pressure pads being spaced from said coupling joists and being attached to the outer wall, each pressure pad consisting of a plate engageable by one of the barrier members and capable of covering substantially an-entire one of said rectangular areas, and legs secured to the plate;

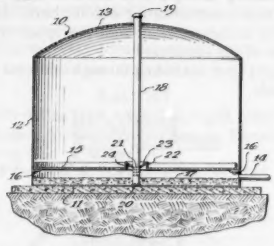
said barrier members having their junctions located on the coupling joists and attached thereto but not to the pressure pads; and

said insulating material is packed into the remaining void space between the outer and inner walls.

3,862,701
AUTOMATIC BLEEDER VENT FOR COVERED FLOATING ROOF TANKS

Robert Winfield Strunc, Clarendon Hills, and Robert Kenneth Doty, Western Springs, both of Ill., assignors to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Jan. 31, 1972, Ser. No. 222,158
Int. Cl. B65d 87/18
U.S. Cl. 220—227 5 Claims

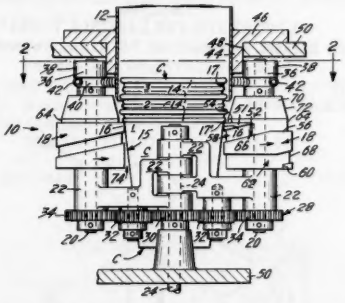


1. In a storage tank for a volatile liquid having an outer roof and an internal floating roof, the improvement comprising:
- a vent pipe having one end in liquid communication with the bottom space of the tank and the other end extending in vapor communication to outside the tank;
- means to support the floating roof above the tank bottom and above the liquid when the liquid contents drops below a predetermined level;
- a vapor vent opening in the vent pipe beneath and in close proximity to the bottom of the floating roof when it is in nonfloating position; and
- a float in the vent pipe, said float having its peripheral edge in close proximity to the inner surface of the vent pipe.

3,862,702
SELF-ADJUSTING CUP DISPENSER AND METHOD

Donald Owen Johnson, Matawan, and Anthony Rosario Marchiano, Lyndhurst, both of N.J., assignors to American Can Company, Greenwich, Conn.

Filed Jan. 21, 1974, Ser. No. 434,945
Int. Cl. B65g 59/10; B65h 3/28
U.S. Cl. 221—1 7 Claims

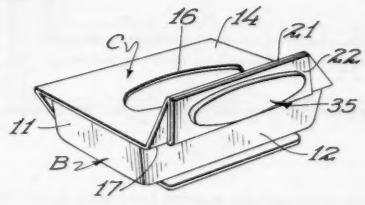


1. An improved dispenser for dispensing a nested stack of cups having tapered side walls and curled rims, the dispenser being of the type which includes
- frame means having an opening therein defining a dispenser throat for receiving the nested stack of cups,
- an annular series of rotary dispensing worms respectively fixedly mounted on rotary shafts and positioned adjacent the frame throat, the dispensing worms having about their respective peripheries, a flat-topped knife-edge portion which gradually thickens into circumscribing worm and groove formations for separating the lowermost cup from the stack and passing the separated cup downwardly through the groove and dispensing it,
- and drive means including gear means for driving the worm shafts and dispensing worms in timed cooperative relationship, the improvement which comprises:
- cam means including rotary cams and a cam ring mounted on the frame means, the rotary cams being mounted on the rotary shafts and driven by the gear means in tiime with the dispensing worms and cooperative with the cam ring to automatically momentarily and simultaneously move each dispensing worm radially outward from the frame throat once for each revolution of the dispensing worms and thereby allow them to self-adjust to serially accept and dispense each cup from a stack though the diameters of some cups are outside manufacturer's diameter tolerance range for the cup designated size of the stack,
- biasing means for biasing the rotary shafts, dispensing worms and rotary cam means radially inward so that the rotary cam means are cooperative with the cam ring and
- the gear means including connecting means for allowing each dispensing worm to move substantially radially to independently adjust to the cup and brim diameter variances to maintain working contact with the cups while maintaining the timed cooperative relationship between the dispensing worms and the rotary cam means.

3,862,703
RECLOSABLE PLUG TYPE DISPENSING PACKAGE

Daniel P. Dutcher, Shoreview, Minn., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed Sept. 10, 1973, Ser. No. 395,630
Int. Cl. B65h 1/00
U.S. Cl. 221—63 9 Claims



1. A package for liquid bearing tissues and the like, the package including:
- a tray having a bottom and upwardly extending connected side and end walls thereon;
- said side and end walls including an encircling outwardly extending flange on a substantially common plane throughout;
- a cover panel sealed to said outwardly extending flange about the entire upper surface of said flange;
- said tray and under surface of said cover panel being resistant to the absorption of the liquid absorbed in the tissues and the like;
- an aperture opening in said cover panel;
- a flap structure hingedly secured to one edge of said cover panel;
- a resilient plug secured to said flap structure and extending in one position of said flap structure and into said aperture to form a seal with the edges of said aperture; and
- a side wall hinged to the edge of said cover panel opposite to said one edge to which said flap structure is secured, and a bottom panel hingedly connected to said side wall and secured to the under surface of said tray bottom.

5. A package for liquid bearing tissues and the like, the package including:

a tray having a bottom and upwardly extending connected side and end walls thereon;

said side and end walls including an encircling outwardly extending flange on a substantially common plane throughout, a cover panel sealed to said outwardly extending flange about the entire upper surface of said flange;

said tray and under surface of said cover panel being resistant to the absorption of the liquid absorbed in the tissues and the like;

an aperture opening in said cover panel;

a first flap structure section hingedly connected to one edge of said cover panel;

a second flap structure section hinged to said first flap structure section; and

a resilient plug secured to said second flap structure section and extending in one position of said first and second flap structure sections into said aperture to form a seal with the edges of said aperture.

3,862,704

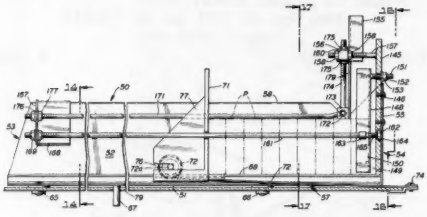
ADAPTOR SYSTEM FOR A VENDING MACHINE TO ADAPT IT TO THE VENDING OF VARIOUS SIZE ARTICLES

Clarence Frederick Millies, and Loren Vance Hughes, both of 727 Dixmyth, 605 Tower West, Cincinnati, Ohio 45220

Filed Aug. 7, 1973, Ser. No. 386,394The portion of the term of this patent subsequent to Sept. 11, 1990, has been disclaimed.

Int. Cl. G07f *11/16*

U.S. Cl. 221—242 **39 Claims**



1. An article ejecting machine comprising ejector mechanism which includes a movable magazine having article stop means adjacent its ejecting end for engaging and stopping the leading article of a supply of articles disposed in the magazine, said stop means engaging and stopping the leading article at a predetermined ejector plane, means for bodily advancing the magazine to an ejecting position, magazine stop means to determine the ejecting position thereof and locate the ejector plane in accordance with the thickness of the articles in the magazine, ejector means movable in an ejecting stroke to engage the leading article in the magazine and move it off said article stop means, and means for varying the location of said ejector plane so that when the magazine is in ejecting position the ejector plane is positioned to compensate for the difference in thickness of the articles to be ejected.

3,862,705

HAND-HELD DISPENSER WITH MIXING VALVE AND PRESSURIZING VALVE

Steven W. Beres, and Carmelo Carrion, Jr., both of Bridgeport, Conn., assignors to RCA Corporation, Greenwich, Conn.

Filed Sept. 7, 1973, Ser. No. 395,354

Int. Cl. B65d *35/24*

U.S. Cl. 222—94 **13 Claims**

1. A valve construction for aerosol dispensers, comprising in combination:

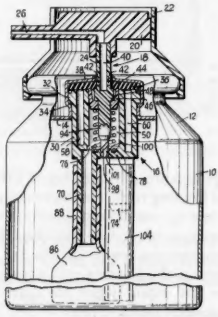
a. a pressurized container adapted to carry liquid propellant which is convertible from a liquid to a gaseous state.

b. a valve housing carried by the container, said housing having an annular valve seat in its upper portion,

c. a valve stem movable longitudinally in the housing and having a valve shoulder cooperable with said seat and engaging the latter to shut off flow therethrough when the stem is in a raised position in the housing,

d. said housing having a bore and a bottom wall provided with a hole communicating with the bore, said hole being in direct communication with the upper portion of the interior of the container,

e. said valve stem extending through said bore and bottom-wall hole,



f. said housing having a depending nipple which is adapted to be connected to a liquid-carrying bag disposed within the container and which has a passage communicating with the bore of the housing, and

g. valving means on the valve stem, cooperable with the walls of the bottom-wall hole to effect communication between the housing bore and the interior area of the container when the stem is in a lowered position in the housing thereby to transfer the vapor pressure existing in the upper portion of said interior area to the interior of the bag, said valving means blocking said communication when the stem is in its raised position.

3,862,706

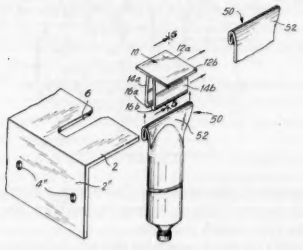
SUPPORT FOR COLLAPSIBLE TUBES

Werner Burkart, Arsendistrasse, 55, Kriens, Switzerland

Filed May 1, 1974, Ser. No. 466,088

Int. Cl. B65d *35/56*

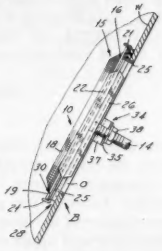
U.S. Cl. 222—105 **8 Claims**



1. A support for collapsible tubes, containing tooth paste and the like plastic materials, comprising, in combination: means for attaching the support to a wall or other surface; said means having therein at least one transverse recess for remov-

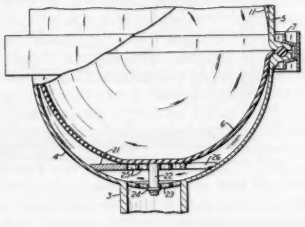
ably receiving each a substantially T-shaped clamp member; the latter having a pair of depending, resiliently inwardly biased limbs with opposing terminal portions between which the crimped-over neck portion of a collapsible tube can be held, between the at least partly turned-over tube end and its central portion; and operating means on said terminal portions, allowing the tube neck to be inserted between said limbs in an inwardly axial direction, against the biasing force of said limbs, then to be held suspended in an inverted position without danger of being accidentally released in the opposite axial direction, but permitting the tube to be manually removed by a lateral sliding movement from between said limbs.

3,862,707
BIN AERATOR ASSEMBLY OR UNIT
Robert C. Reiter, Aurora, Ill., assignor to Material Control, Inc., Aurora, Ill.
Filed May 4, 1973, Ser. No. 357,205
Int. Cl. B65d *83/06*
U.S. Cl. 222—193 **10 Claims**



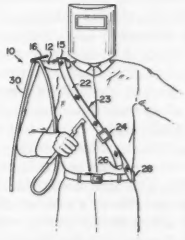
1. A unit for removably mounting an aerator device on a material-enclosing bin wall at an aperture in said wall and from the exterior of the latter, which device includes a plate part spanning and in sealed relation to the aperture; said unit comprising a mounting plate of annular outline and external dimension approximating in size and shape that of said plate part, and being apertured to receive another part of said device which passes through the wall aperture, and mounting bracket means externally engageable with said enclosing bin wall and spanning the aperture thereof, said mounting bracket means coacting with said other part of the device in releasably clamping the latter to said wall.

3,862,708
CONTAINER FILLING DEVICE WITH FLOW CONTROL
Chester E. Waxlax, Moon Twp., Pa., assignor to Horix Manufacturing Company, Pittsburgh, Pa.
Filed Oct. 11, 1973, Ser. No. 405,441
Int. Cl. B67c *3/04*
U.S. Cl. 222—444 **3 Claims**



1. A container-filling device comprising a measuring tank provided in its bottom with a central outlet opening, a resilient diaphragm mounted at its edge in the tank and dividing it into an upper air chamber and a lower liquid dispensing chamber, the side wall of said lower chamber curving downwardly and inwardly to said outlet opening, a separate flow control plate in said lower chamber covering said opening and seated at its edge on said side wall around the opening, said plate having a central stem extending down into said opening, the tank being provided with means extending across said outlet opening for anchoring said stem to hold the plate in place, the plate having holes through it for rapid flow of liquid through it to said outlet opening, the plate being provided with a restricted flow passage extending inwardly from its periphery for connecting said lower chamber with said outlet opening, and the upper chamber having an inlet for air under pressure for stretching the diaphragm downwardly and into engagement with said plate to force liquid down through said holes and to then close them to reduce the rate of flow through said outlet opening, said restricted passage being in a position for continued flow of liquid therethrough after said holes have been closed by the diaphragm and until the lower chamber is substantially emptied by the diaphragm.

3,862,709
CABLE HOLDER
Harold L. Roshaven, 324 Longfellow Blvd., Lakeland, Fla. 33801
Filed June 15, 1973, Ser. No. 370,225
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 P **2 Claims**



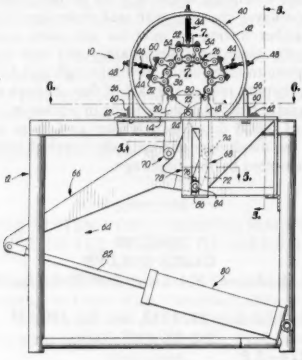
1. A holder device for retaining and supporting objects placed across the wearer's body, said device comprising: retaining means including a shoulder plate, a strap guide comprising a bracket of predetermined size and shape attached to said shoulder plate and a cable hook comprising a substantially V-shaped member attached to said shoulder plate with the open end of said V-shaped member oriented toward said strap guide; strap means including at least one belt attachable to said retaining means by passing said belt through said bracket, said belt including a buckle attached to one end thereof whereby the length of said belt may be adjusted to fit the wearer; and attachment means comprising a substantially N-shaped clip slidably attachable to said belt in engaging relation to the wearer's clothing whereby said device may be further secured to the wearer, said strap guide further including means comprising an aperture formed in said bracket and a screw-threaded fastener mounted therein in abutting relation to said strap means whereby said strap means may be fixedly held within said strap guide.

3,862,710

PIPE CUTTING MACHINE

Leonard P. Bivona, 312 N. E. 88th ST. N., Kansas City, Mo. 64155; Leonard I. Nunnink, Jr., 307 Cantebury, Belton, Mo. 64012, and Robert L. Seek, 7128 E. 106th Terrace, Kansas City, Mo. 64134

Filed Aug. 27, 1973, Ser. No. 391,935
Int. Cl. B26f *3/00*
U.S. Cl. 225—103 **11 Claims**



1. A machine for severing tubular members comprising:
a base;
a pair of jaws mounted on said base for relative reciprocable movement toward and away from one another;
an elongated, flexible cutting element;
means securing one end of said element to one of said jaws and the opposite end to the other of said jaws;
power apparatus operably coupled with said jaws for forcing said element through the walls of a member encircled by the element when said apparatus is actuated to thereby sever the member; and
structure on said base resiliently pulling outwardly on said element to hold the same in a non-collapsed, open loop prior to, during, and after actuation of said apparatus,
said jaws being operable to constrict said loop against the resistance of said structure during relative movement in one direction for severing the member and being operable to expand said loop during relative movement in the opposite direction, whereby to permit rapid insertion and removal of the member into and out of the loop.

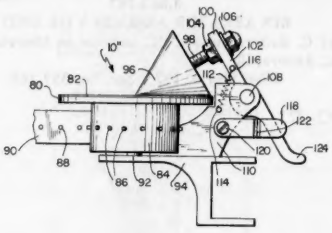
3,862,711

YARN FEEDING DEVICE FOR TEXTILE MACHINES SUCH AS KNITTING MACHINES AND THE LIKE

Donald Smith, and John Michael Shepherd, both of Ilkley, England, assignors to I.W.S. Nominee Company Limited, London, England

Continuation-in-part of Ser. No. 166,134, July 26, 1971, abandoned. This application Aug. 21, 1973, Ser. No. 390,197
Claims priority, application Great Britain, July 29, 1970, 36773/70
Int. Cl. D04b *15/48*
U.S. Cl. 226—184 **3 Claims**

1. A yarn feed device for knitting and the like textile machines comprising:
a circular plate having a plane surface;
means supporting said plate for rotation about an axis normal to said surface;
at least one conical roller;
a lever supporting said conical roller for rotation about its axis, said axis being inclined to and intersecting the axis of rotation of said surface and said roller bodily cooperatively engaging said surface radially thereof so as to define therewith a nip, the line whereof intersects said axes of rotation of said surface and said conical roller at the point of intersection of said axes;
drive means for rotating at least one of said plate and said roller about said axis thereof;
a yarn guide located in yarn supplying relation to said nip and being adjustable along the length of said nip and means for so adjusting said guide whereby said yarn can be given a speed corresponding to the linear speed of said surface at the point of yarn supply;
means pivotally mounting said lever intermediate its ends on the plate supporting means for pivotal movement about an axis normal to the axis of rotation of the circular plate;



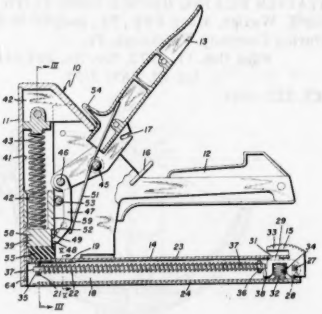
said lever being substantially vertically disposed and having an upper end above the pivotal mount supporting the conical roller for rotatable movement;
spring means connected between the plate supporting means and the upper portion of the lever above the pivot point for constantly urging said upper end down toward the plate so as to constantly urge said conical roller into engagement with the plate; and
a spring latch mounted on and outstanding from the plate supporting means and with which the lower portion of the lever below the pivot point is adapted to cooperate so as to hold the lever in a locked position with the roller out of engagement with the plate.

3,862,712

STAPLER

Gabriel M. LaPointe, Worcester, and John S. Vecchione, Sturbridge, both of Mass., assignors to Parker Manufacturing Co., Worcester, Mass.

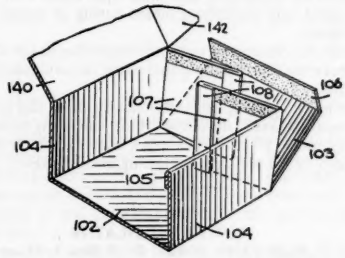
Filed Aug. 27, 1973, Ser. No. 391,777
Int. Cl. B25c *5/06*
U.S. Cl. 227—127 **5 Claims**



1. A stapler, comprising
a. a main housing having a grip handle and an operating handle,
b. an elongated compartment underlying the main body and extending in the same general direction as the grip handle,

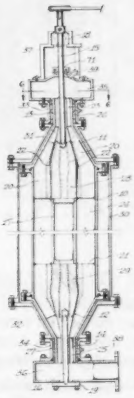
c. a staple track slidable in and out of an opening in the compartment and having a pusher slidably mounted on the track, the staple track being channel shaped and having a cross brace located adjacent each end, each brach having a central aperture,
d. a spring-retaining rod extending lengthwise of the track through the apertures,
e. a coil spring carried on the rod with one end engaging a cross brace and the other end connected to the staple pusher, and
f. a latch mounted in the staple track adjacent the opening in the compartment, the latch normally preventing the track from leaving the compartment, the latch having a horizontal lug that locks under the adjacent end of the rod.

3,862,713
PACKAGE CONSTRUCTION
Rudolph A. Froehlig, College Point, N.Y., assignor to Modern Album and Finishing Co., Inc., College Point, N.Y.
Division of Ser. No. 180,694, Aug. 15, 1971, Pat. No. 3,752,386. This application Nov. 3, 1972, Ser. No. 303,317
Int. Cl. B65d *5/22*
U.S. Cl. 229—33 **8 Claims**



1. A package comprising a face panel, a first pair of wall panels extending from first pair of opposed edges of said face panel, a second pair of wall panels extending from second pair of opposed edges of said face panels, each of said first and second pair of wall panels having opposed end and side edges with one of said side edges of each pair of wall panels in pivotal relationship to the respective opposed edges of said face panel along hinge lines, a flap extending from each end edge of each of said first pair of wall panels and pivotly mounted thereto along a hinge line, a tab extending from each of the side edges of the second pair of wall panels and pivotly mounted thereto along a hinge line, one of said first pair of wall panels having a tab extending therefrom and the other of said first pair of wall panels having a cover panel extending therefrom and hingedly connected thereto, a flap tab extending from the side of each flap opposite its hinge line, adhesive on all of said tabs and on the edges of the wall panels along the areas adjacent said tabs, adhesive on said flap coextensive with the adhesive on said wall panels, said flaps being folded along their hinge lines with the wall panels in upright position and with the flaps adjacent said second pair of wall panels and said tabs being folded along the hinge lines with at least part of the flaps interposed between the flaps tabs and the second pair of wall panels and the adhesive on the tabs maintaining the flaps in position.

3,862,714
VORTEX CLARIFIER
John D. Boadway, Kingston, Ontario, Canada, assignor to Queen's University at Kingston, Kingston, Ontario, Canada
Continuation-in-part of Ser. No. 35,759, May 8, 1970, abandoned. This application Nov. 14, 1972, Ser. No. 306,468
Int. Cl. B04b *5/04*
U.S. Cl. 233—3 **26 Claims**

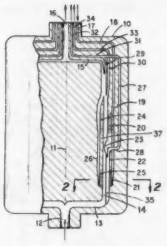


1. A method for producing a forced vortex in a fluid contained in a separating annulus defined by two synchronously rotating cylindrical surfaces comprising the steps of:
establishing a rotational flow pattern in said fluid,
providing a flow path for said fluid maintaining said rotational flow pattern and subdivided into a plurality of separate streams corresponding portions of each having substantially equal axial velocity,
providing flow path segments of radial extend increasing up to the dimension of said annulus to impart additional rotational kinetic energy to the fluid while maintaining corresponding portions of each stream at substantially equal axial velocity, and
recombining the streams at least adjacent the periphery of said separating annulus while maintaining the angular and axial velocities of adjacent portions of the fluid in the annulus substantially equal thereby forming a forced vortex.

3,862,715
CENTRIFUGE FOR THE INTERACTING OF CONTINUOUS FLOWS
Carl J. Remenyik, 2256 Estelle Cir., Knoxville, Tenn. 37920
Filed May 26, 1972, Ser. No. 257,081
Int. Cl. B04b *15/02*
U.S. Cl. 233—15 **5 Claims**

1. A centrifuge rotor for effecting interaction between continuously flowing first and second liquid streams and for continuously removing the products of the interaction, which comprises: a cylindrical rotor body symmetrical about an axis of rotation; a slender annular reaction vessel within the rotor body coaxial with the axis of rotation; a first liquid inlet to the rotor body; an axially-symmetrical first inlet passage peripherally connecting the first inlet with one end of the reaction vessel for uniformly and continuously admitting the first liquid; a slender annular first chamber within the body coaxial with the reaction vessel and spaced farther from the axis of rotation; a second liquid inlet to the rotor body; a second inlet passage peripherally connecting the second inlet with the first chamber for uniformly and continuously admitting the second liquid; a plurality of radially-oriented first openings interconnecting the first chamber and the reaction vessel whereby the

second liquid is continuously in cross-flow relationship with the first liquid to bring about interaction therebetween; an axially-symmetrical first outlet passage connected to the second end of the reaction vessel to continuously remove one



interaction product; an axially-symmetrical second outlet passage connected to the periphery of the reaction vessel at a greater distance from the axis of rotation to remove another interaction product; and outlets from the rotor body connected to the first and second outlet passages.

3,862,716

AUTOMATIC CASH DISPENSER AND SYSTEM AND METHOD THEREFOR

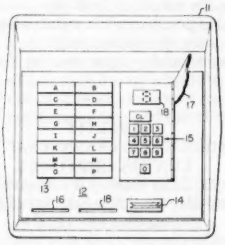
Robert Black, Kenley, and Christopher Hall, Tonbridge, both of England, assignors to Burroughs Corporation, Detroit, Mich.

Continuation of Ser. No. 277,230, Aug. 2, 1972,. This application Jan. 14, 1974, Ser. No. 433,399

Claims priority, application Great Britain, Oct. 13, 1971, 47615/71

Int. Cl. G06k 5/00; G06f 7/00

U.S. Cl. 235—61.7 B **45 Claims**



1. An automatic dispenser, comprising a dispensing device, a credit card information entry device, and control means for the dispensing device responsive to the credit card information entry device and to information taken from a credit card for the automatic dispenser, means for modifying the information taken from the card for generating a first unique number to validate the credit card, personal identification generator means for generating a second unique number, comparison means for comparing said second unique number with password data entered by a dispenser user in said credit card information entry device in order to validate the dispenser user and for providing a proceed signal to said control means if said user is validated.

3,862,717

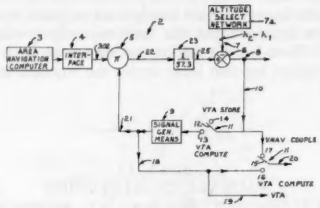
METHOD AND APPARATUS FOR AUTOMATICALLY COMPUTING VERTICAL TRACK ANGLE

James J. Lehfeldt, Olathe, Kans., assignor to King Radio Corporation, Olathe, Kans.

Filed Aug. 9, 1973, Ser. No. 387,209

Int. Cl. G06g 7/32

U.S. Cl. 235—150.22 **6 Claims**



1. A device for computing vertical track angle, said device having a first signal input representing horizontal distance to a vertical waypoint and a second signal input representing the difference between a first aircraft altitude and a second desired aircraft altitude, said device comprising:

means for generating a third signal, said generating means having an input and an output;

means for multiplying said third input signal with said first signal, said multiplying means having an output product signal;

means for obtaining a signal corresponding to the difference between the output product signal and said second signal; and

means for applying said difference signal to said generating means whereby the output of the generating means corresponds to VTA (vertical track angle) when the output of said difference signal obtaining means is zero.

3,862,718

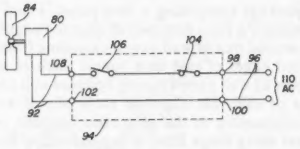
POWER VENTILATOR

Henry N. Butler, Hwy. 180 E., Rt. 3, Box 3, Mineral Wells, Tex. 76067

Filed Feb. 23, 1973, Ser. No. 335,073

Int. Cl. F24f 7/02, 11/02

U.S. Cl. 236—49 **15 Claims**



1. A ventilator for a space or the like comprising:

selectively operable means for moving air from the interior of said space; and

temperature responsive means operatively associated with said air moving means for sensing the temperature in said space and for:

a. operating said air moving means when the temperature in said space exceeds a first set temperature,

b. continuing to operate said air moving means until the temperature in said space falls below a second set temperature; and,

c. preventing operation of said fan when the temperature in said space exceeds a a third set temperature and continuing to prevent operation of said fan until the temperature in said space falls below a fourth set temperature, said third set temperature being higher than

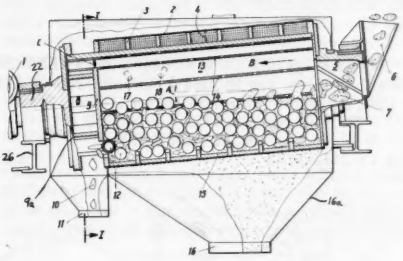
said first set temperature, said fourth set temperature being substantially lower than said third set temperature.

3,862,719

BALL MILL FOR TREATING USED CASTING SAND

Karl A. Muller, Ruebenacher Str. 89, 54 Koblenz-Metternich, Germany

Filed May 3, 1973, Ser. No. 356,984
Claims priority, application Germany, June 15, 1972, 2229088; July 11, 1972, 2233923
Int. Cl. B02c *17/06*; B07b *1/24*
U.S. Cl. 241—74 7 Claims



1. A ball mill for recovering sand from a charge of used casting sand containing metallic residue comprising:

a drum having an interior wall and an exterior wall forming an intermediate chamber therebetween, the exterior wall including a screen through which sand is screened while continuously leaving said drum as recovered sand;

a plurality of mill balls located within the interior wall of said drum;

feeding means disposed at one end of said drum;

means for longitudinally subdividing the intermediate chamber;

means responsive to the rotation of said drum, for transporting said charge toward the end of said drum opposite to said feeding means; and

continuously operating discharge means disposed at said opposite end of the drum and provided with openings sized to permit the discharge of said metallic residue while retaining said balls.

3,862,720

WASTE DISPOSER INSTALLATION

Lauren W. Guth, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

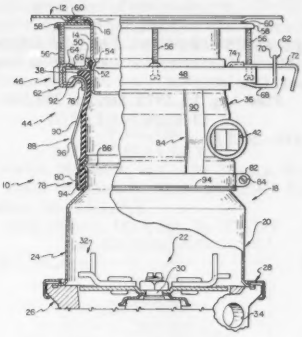
Filed Sept. 6, 1973, Ser. No. 394,928
Int. Cl. B02c *18/42*
U.S. Cl. 241—100.5 7 Claims

1. A waste disposer for a sink having an opening therethrough, comprising

a disposer housing having means therein for comminuting waste material;

a resilient annular member for providing communication between the opening and the housing; and

means for suspending the housing from the sink including means for securing the upper and lower ends of the member to the sink and the housing respectively; and a support element independent of the resilient annular member, extending between the upper and lower securing means for substantially wholly bearing the weight of the housing, said upper securing means further including a clamp for engaging said support element and for biasing



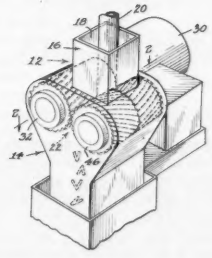
the support element to the upper end of said resilient member against the sink.

3,862,721

MATERIAL GRINDING MECHANISM

Henry Joseph Flair, Franklin Park, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

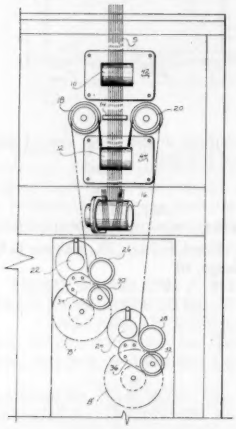
Filed Feb. 7, 1973, Ser. No. 330,429
Int. Cl. B02c *4/08*
U.S. Cl. 241—236 9 Claims



1. Material handling mechanism including a pair of complementary generally cylindrical and peripherally contacting members rotatable about laterally spaced axes in a direction to advance work material directed therebetween, said rotatable members presenting a plurality of partially meshing circumferentially distributed peripheral teeth of generally herringbone shaped and defining a work material entering throat providing clearance to accommodate work material, the peripheries of said rotatable members, when viewed from the work-receiving side thereof, defining the aforesaid herringbone-shaped teeth in which the apices thereof are located intermediate the opposite ends of their respective rotatable member, the included angles of the apices of one rotatable member facing and opening toward the corresponding included angles of the apices of the other rotatable member as the periphery of one member moves toward the periphery of the other member with said apices being pointed in the direction said work-receiving side and away from the entering throat so that the axially opposite extremities of the herringbone-shaped teeth of one of said members initially and successively engage the corresponding opposite extremities of the complementary teeth of the other member with the consequent continued working engagement of said teeth acting from opposite sides of and toward said apices whereby to

assure continued accumulation of work material in the vicinity of said successively meshing apices.

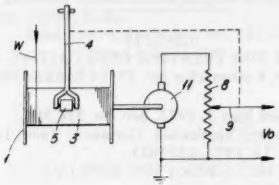
3,862,722
FILAMENT SPINNING TAKE-UP MEANS
John H. Pierce, Charlotte, N.C., assignor to The Bouligny Company, Charlotte, N.C.
Filed Aug. 15, 1973, Ser. No. 388,566
Int. Cl. B65h *54/02, 51/32*
U.S. Cl. 242—35.5 R **4 Claims**



1. In filament spinning take-up means by which a plurality of filament strands issued from a spinning station in a plane as a sheet are received at a first godet and directed therefrom to a second godet for delivery to a bobbin winder, and in which said second godet and said bobbin winder operate about respective horizontal axes extending perpendicularly with respect to the plane of the filament sheet issued by said spinning station, the improvement which comprises means supporting said first godet for operation about a horizontal axis that is angled sufficiently from parallel with respect to the plane of the filament sheet issued by said spinning station for directing the filament strands of said plurality to said second godet in spaced relation without causing the strand sheet received from said spinning station to be turned unduly from parallel with respect to said plane by said first godet.

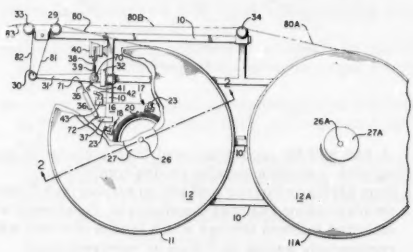
3,862,723
WINDING APPARATUS FOR ELONGATED FLEXIBLE MATERIAL
Zbigniew Bonikowski, London, England, assignor to British Insulated Callender's Cables Limited, London, England
Continuation of Ser. No. 137,554, April 26, 1971, abandoned. This application July 12, 1973, Ser. No. 378,597
Int. Cl. B65h *59/38*
U.S. Cl. 242—45 **3 Claims**

1. An electrical device for generating a voltage proportional to the linear velocity of wire being wound on to or from a coil wound on a drum comprising a tacho-generator driven by the drum; a potentiometer having an adjusting arm, the output of the tacho-generator being connected across the potentiometer; a detector capable of directly measuring the radius of the coil of wire; and coupling means through which the adjusting arm of the potentiometer is coupled to and can be actuated by



the radius detector to produce a voltage signal representing the linear speed of the wire.

3,862,724
APPARATUS FOR CONTROLLING WEB TENSION
John R. Johnson, and Richard I. Ashcroft, both of Toledo, Ohio, assignors to Owens Illinois, Inc., Toledo, Ohio
Filed Apr. 18, 1973, Ser. No. 352,315
Int. Cl. B65h *25/22*
U.S. Cl. 242—75.43 **1 Claim**



1. Apparatus for unreeling a roll of web-like material from a spool containing said material to supply equipment performing a processing operation upon said web-like material, said equipment exerting a pulling force on said material, which comprises, in combination:

a. a base;

b. a turntable, rotatably mounted on said base, for carrying said spool containing said web-like material, said turntable including a circular rim extending downward from the underside of said turntable;

c. a pair of diametrically opposed drag brake means, each of said drag brake means including:

i. a curved drag brake shoe support mounted to said base at one end of said drag brake shoe support for rotation within the plane of said rim, said drag brake shoe support being spaced radially outwardly from said rim and extending in a concentric curve around no more than one quarter of the circumference of said rim;

ii. a drag brake shoe pad mounted on said curved drag brake shoe support; and

iii. drag brake actuator means for moving said curved brake shoe support to bring said drag brake shoe pad into contact with said rim;

d. a pair of diametrically opposed stopping brake means, said stopping brake means and said drag brake means being positioned adjacent to one another in the same horizontal plane about the circumference of said rim, each of said stopping brake means including:

i. a curved stopping brake shoe support mounted to said base at one end of said stopping brake shoe support for rotation within the plane of said rim, said stopping brake shoe support being spaced radially outwardly

from said rim and extending in a concentric curve around no more than one quarter of the circumference of said rim;

ii. a stopping brake shoe pad mounted on said cuved stopping brake shoe support adjacent said rim; and

iii. stopping brake actuator means for moving said curved stopping brake shoe support to bring said stopping brake shoe pad into contact with said rim to thereby stop the rotation of said turntable;

e. a plurality of idler rolls mounted on said base for guiding said material from said spool to said equipment;

f. a dancer roll mounting arm pivotally mounted at one end on said base for rotation about an axis parallel to the axis of rotation of said turntable;

g. a dancer roll attached to said mounting arm, said dancer roll being positioned intermediate two of said idler rolls to thereby form a tortuous path of travel for said web;

h. biasing means connected to said mounting arm for normally rotating said mounting arm away from said idler rolls to thereby provide a known tension in said material;

i. proportioning means, connected to said mounting arm and responsive to the angular position thereof, for controlling the application of said drag brake actuator means to thereby control the speed of rotation of said turntable to maintain a constant tension in said material as it is unreeled; and

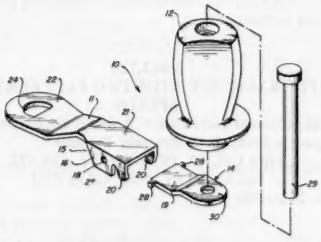
j. means for activating said stopping brake actuator means to thereby stop the rotation of said turntable in response to the movement of said mounting arm to its most remote location away from said idler rolls by said biasing means.

3,862,725

FOLDING CRANK ARM ASSEMBLY

John L. Gename, Naperville, Ill., assignor to Popeil Brothers, Inc., Chicago, Ill.

Filed July 6, 1973, Ser. No. 376,967
Int. Cl. G05g *1/00*; **A01k** *89/00, 87/00*
U.S. Cl. 242—84.1 J **6 Claims**



1. A folding crank arm assembly comprising in combination,

a crank arm,

a crank knob,

a crank knob carrier,

an offset provided on said crank knob carrier proportioned and oriented to position the crank knob in the operative position with its base approximately parallel to the crank arm,

a hinge lock assembly provided at one end of the crank arm,

a lock plate,

means for pivotally mounting said lock plate in interposing relationship between said crank knob and said crank knob carrier,

said lock plate including lock means for locking said crank knob carrier in engaged position with regard to said hinged lock assembly,

means for mounting the crank arm to a rotatable member at that portion opposed to the hinge lock assembly,

a pair of opposed pivot ears on the end of the crank arm having apertures to receive pivot pins on the carrier,

pivot pins on the carrier for inserting and swiveling the same within the pivot ears of the crank arm,

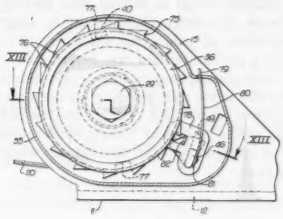
and a pair of opposed yieldable jaws on a portion of said crank arm remote from said rotatable member and proportioned and oriented to yieldably receive and removably secure the crank knob carrier.

3,862,726

SAFETY BELT DEVICE

Charles J. Ulrich, Montecito, and Akira Tanaka, Northridge, both of Calif., assignors to American Safety Equipment Corporation, New York, N.Y.

Filed July 16, 1973, Ser. No. 379,710
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **6 Claims**



1. A safety belt device comprising:

a frame;

a shaft extending transversely of said frame and journalled for rotation therein;

a spool fixed for rotation on said shaft and having one end of a strap secured to said shaft and wound about said spool, the other end of said strap being adapted to be extended outwardly of said frame;

a rewind spring operatively connected to both said frame and said shaft;

at least one ratchet tooth gear mounted on said shaft and rotatable therewith;

a lock bar mounted on said frame and having at least one locking pawl thereon adapted to engage the teeth of said ratchet tooth gear, said lock bar being movable between positions engaging said teeth and out of engagement therewith;

inertia responsive means associated with both said frame and said lock bar for holding said lock bar in a position out of engagement with said ratchet tooth gear and responsive to sudden acceleration of said strap off of said spool for moving said pawl into locking engagement with said teeth;

strap state sensing means associated with said frame for sensing the rolled-up condition of said strap on said spool and holding said lock bar out of locking engagement with said gear until a predetermined amount of said strap is unrolled off of said spool;

blocking means associated with said frame for selectively holding said lock bar out of engagement with said gear while said strap is being unwound from said spool and releasing said lock bar for locking engagement with said gear when a predetermined amount of said strap is wound back onto said spool by said rewind spring; and

lock bar biasing means associated with said frame normally biasing said lock bar into locking position with respect to said gear, said inertia responsive means including means thereon for selectively holding said lock bar against the bias of said lock bar biasing means and releasing said lock bar upon the actuation of said inertia responsive means when said sudden acceleration takes place, said inertia responsive means including an inertia member carried by

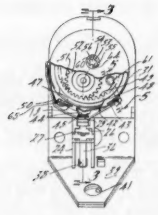
one end portion of said shaft, said inertia member being turnable on an axis extending through its center of gravity, said axis being parallel to and eccentric from the axis of said shaft, a cup member rotatably carried by said shaft, said inertia member and said cup member having cooperating gripping portions, a calibration spring carried by said shaft and connected to said inertia member for normally holding the gripping portions of said inertia member and said cup member out of gripping engagement with each other, a split clutch spring yieldably gripping the exterior surface of said cup member with a predetermined pressure, a ratchet wheel rotatably mounted on said shaft, said clutch spring having a ratchet wheel rotation means thereon engaging said ratchet wheel for transmitting rotation of said clutch spring to said ratchet wheel, a dog fixedly secured to said lock bar, said dog having ratchet wheel teeth engaging means thereon adapted to engage the teeth of said ratchet wheel when said ratchet wheel is moved into locking engagement therewith, said inertia member being adapted, upon the acceleration of said strap outwardly from said frame beyond a predetermined rate determined by the force of said calibration spring, to turn against the tension thereof to thereby move said gripping portions into engagement to thereby rotate said cup member which rotates said clutch spring and thus rotates said ratchet wheel into locking engagement with said ratchet wheel teeth engaging means.

3,862,727

SEAT BELT RETRACTOR WITH ELECTRIC CONTROL SWITCH

Robert C. Fisher, 580 E. Long Lake Rd., Bloomfield Hills, Mich. 48013

Filed Apr. 20, 1972, Ser. No. 245,927
Int. Cl. A62b *35/00;* **B65h** *75/48*
U.S. Cl. 242—107.4 **9 Claims**



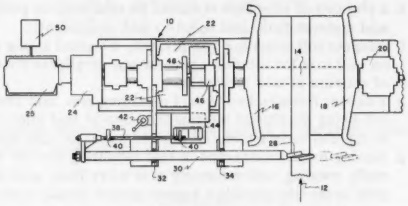
1. In a locking seat belt retractor, a frame, a shaft, a spool mounted on said shaft for rotation therewith on said frame, said spool having ratchet teeth, a flexible belt secured to and adapted to be wound on said spool, a spring constantly urging the spool in a direction to effect retraction of the belt thereon, cam means coupled to said spool to rotate when said spool rotates, a pawl pivoted on said frame and engagement with the ratchet teeth of said spool to lock the spool against rotation in the direction of belt protraction, spring means biasing said pawl toward engagement with said ratchet teeth so that said pawl moves from a first position in engagement with said cam means and out of engagement with said ratchet teeth to a second position in engagement with said ratchet teeth and in the path of rotation of said cam means upon a predetermined rotation of said spool, and an electrical switch supported on said frame having a fixed contact and a flexible contact movable by said cam means from a position separated from said fixed contact and in the path of rotation of said cam means to a flexed position in contact with said fixed contact.

3,862,728

COIL FORMING APPARATUS

Paul W. Miller, Warren, Ohio, assignor to Wean United Inc., Pittsburgh, Pa.

Filed Oct. 4, 1973, Ser. No. 403,581
Int. Cl. B65h *57/28*
U.S. Cl. 242—158 R **2 Claims**



1. An apparatus for winding into an uniform coil continuous strand-like material fed at any speed up to a specified maximum rate of speed, in which said coil is made up of a large number of wraps displaced axially about its axis of formation comprising:

an arbor around which the material is fed for coiling,

means for rotating said arbor to effect a coiling of said material including means for varying the speed of said arbor to control the peripheral speed of the coil,

means for engaging said material before it is received by said arbor,

a piston cylinder assembly for reciprocally displacing said material engaging means in a direction parallel to the axis of said arbor so that said engaging means will cause an axial displacement of the strand being fed to said arbor, a fluid pump associated with the rotation of said arbor and said displaceable means to control the rate of movement thereof, and

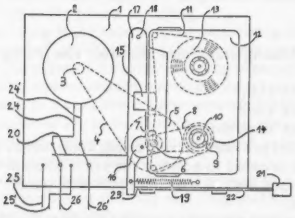
power transmitting means for connecting said pump and said means for rotating said arbor whereby said pump is driven at a speed proportional to the varying speed of said arbor rotating means.

3,862,729

TAPE TRANSPORT WITH TWO FAST FORWARD SPEEDS

Theophiel Clement Jozef Lodewijk Staar, Kraainem, Belgium, assignor to Staar, S.A., Brussels, Belgium

Filed Oct. 10, 1973, Ser. No. 405,122
Int. Cl. B11b *15/32;* **G03b** *1/04*
U.S. Cl. 242—206 **5 Claims**



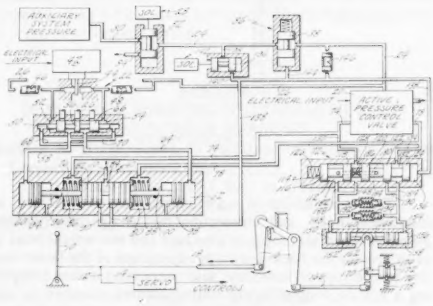
1. In a transport mechanism for driving a tape from reel to reel selectively at recording-playback speed or fast speed, the combination comprising,

a frame for supporting the reels in operating position,

a capstan drive for the tape including a capstan carried by the frame and a shiftable pressure roller, said shiftable pressure roller being displaceable from a first position in which said capstan drive is engaged with the tape to a

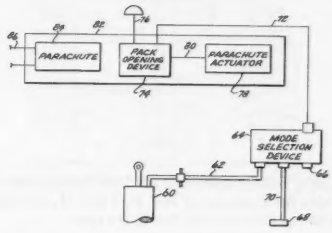
second position in which said tape is released from said capstan drive,
a motor drivingly connected to said capstan,
drive means from said motor to one of said reels including a friction slipping device which slips to absorb the varying differential between recording-playback tape speed when the capstan drive is engaged and a higher nominal speed at which said one reel is driven via said direct drive means,
switching means connected to the power supply circuit of said motor, said switching means having a first position connecting said motor to a power source driving the motor to rotate the capstan at recording-playback speed and a second position connecting said motor to a power source driving the motor at a faster speed,
and manually actuable means for coincidentally shifting said pressure roller and said switching means from said first to said second positions to release the tape from said capstan drive and increase the motor speed to transport the tape at fast speed from reel to reel.

3,862,730
FAS ACTUATION SYSTEM
Harold Gregory Heiney, Monroe, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Oct. 23, 1973, Ser. No. 408,876
Int. Cl. B64c *13/46*
U.S. Cl. 244—83 D **7 Claims**



1. In a feel augmentation system for the cyclic stick of a helicopter,
a first pressure control valve,
a second pressure control valve,
means for supplying duplicate electrical signals indicative of helicopter load factors to said control valves,
force means connected to said cyclic stick through which a force indicative of helicopter loading can oppose deflection of said cyclic stick,
means connecting said first pressure control valve and said force means to provide a force proportional to the electrical input to said first pressure control valve,
engage/disengage valve means in said connecting means between said first pressure control valve and said force means,
pressure comparator means sensing pressure outputs of said first and second pressure control valves,
means responsive to a pressure unbalance between said first and second pressure control valves for actuating said engage/disengage valve to isolate said force means from said first pressure control valve,
means for providing a damping resistance opposing cyclic stick deflection upon a pressure unbalance and isolation of said force means, and
load limiting means for the damping resistance.

3,862,731
ZERO-DELAY SPEED/ALTITUDE CONTROLLED EJECTION SEAT
Robert G. McIntyre, Manhattan Beach, Calif., assignor to McDonnell Douglas Corporation, Santa Monica, Calif.
Filed Dec. 26, 1973, Ser. No. 428,118
Int. Cl. B64d *25/10*
U.S. Cl. 244—141 **8 Claims**

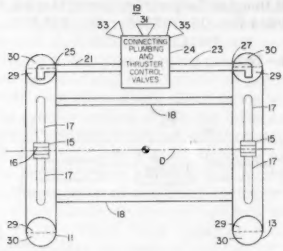


1. A speed/altitude controlled ejection seat system for an aircraft having a rocket powered catapult for ejecting said seat from said aircraft, said seat system comprising:
an ejectable seat frame,
separation means for separating said seat frame from its occupant after said seat frame has been ejected from said aircraft,
an occupant parachute pack,
an occupant parachute within said pack having riser lines for connection to an occupant,
multiple selective means for removing said pack from around said parachute after said occupant and said seat frame have been separated,
one of said multiple selective means comprising a zero delay ripcord interconnecting said seat frame with said parachute pack,
said ripcord having one end releasably fastened to said seat frame and a second end releasably fastened to said parachute pack,
altitude biased sensing means on said seat frame for retaining said one end of said ripcord fastened to said seat frame under predetermined altitude-speed conditions and permitting release under other altitude-speed conditions, said second end being releasable upon retention of said first end to said seat frame, said second end upon release causing separation of said parachute pack from said occupant parachute.

3,862,732
COMBINED FLUID FLYWHEEL AND PROPULSION SYSTEM FOR SPACECRAFT
Theodore Wyatt, Union Bridge, and Charles J. Swet, Mount Airy, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Aug. 7, 1973, Ser. No. 386,469
Int. Cl. B64g *1/20*
U.S. Cl. 244—165 **9 Claims**

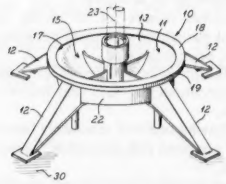
1. In a spacecraft,
fluid flywheel means for providing yaw stabilization for said spacecraft and for storing jet propulsion fluid having a liquid phase and a vapor phase comprising at least one toroidal tank;
means coupled to said jet propulsion fluid stored in said fluid flywheel for providing orbital and attitude control, said means comprising nozzle cluster means coupled to the vapor phase of said jet propulsion fluid stored in said fluid flywheel means and means for controlling the discharge of said jet propulsion fluid through said nozzle cluster means;

means for rotating said jet propulsion fluid stored in said at least one tank, said stored propulsion fluid being H_2O,



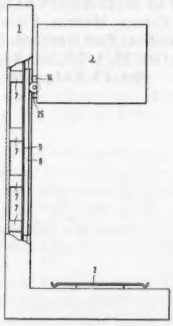
initially predominantly in the liquid phase; and electrical means for dissociating said H_2O into H_2 and O_2 so as to be in equilibrium with the H_2O vapor.

3,862,733
LOAD BEARING STAND
Haskell A. Sullivan, Hammond, Ind., assignor to Sullivan Mfg. & Sales Co., Hammond, Ind.
Filed May 29, 1973, Ser. No. 364,897
Int. Cl. A47g *33/12*
U.S. Cl. 248—48 **24 Claims**



1. A stand for a load comprising:
a base panel being generally annularly-shaped about an axis having spaced, opposed upper and bottom faces, said panel having centrally defined therein a circular, bowl-shaped depression having a rim,
said base panel about the rim having an integral, radially outwardly extending shoulder,
said base panel having a circular flange integrally downwardly depending from the convex bottom face of said depression radially inward of said rim,
said base panel having at least three generally hollow sections circumferentially spaced on said flange and integral therewith, each of said hollow sections having a downward opening at their respective bottom ends and extending parallel to said axis,
said base portion having a load bearable member integrally upstanding from the concave upper face of said depression at the apex thereof and generally coaxial with said axis,
a leg for each of said hollow sections, each of the legs having a surface engaging end and an inner end having an upper portion and a lower portion,
said lower portions of the inner end of each leg having a profile stub section integrally formed therein, said stub section being adapted to make slidable, telescopic engagement within at least a bottom portion of one of said hollow sections to demountably mount the leg on the base panel,
the upper portion of the inner end of each leg having a profile which during telescopic engagement of the stub section in the hollow section, makes abutting, face-to-face engagement with portions of said convex bottom face adjacent said rim and portions of the underside surface of said shoulder,
and each of said legs having a configuration between the surface engaging end and the inner end so that during mounting of the leg with the upper portion in face-to-face engagement with portions of the base panel and the stub telescopically received in a hollow section, said leg extends radially outward and downwardly from the base panel with the surface engaging end adapted to rest on a common hypothetical first plane normally extending across said axis and below said apex.

3,862,734
INSTRUMENT HEAD MOUNTING
Karl Buchin, Berlin, and Horst Scheunemann, Taufkirchen, both of Germany, assignors to H. Berthold A.G., Taufkirchen, Germany
Filed May 17, 1973, Ser. No. 361,225
Int. Cl. F16m *13/00*
U.S. Cl. 248—125 **10 Claims**

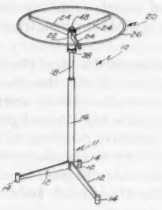


1. The combination of a stationary support structure, an instrument head, and connecting means operatively interposed between said support structure and instrument head so as to provide for back and forth adjustment of the latter relative to said support structure, said connecting means comprising a hollow, longitudinally slotted column member on said support structure; a rack and pinion drive operatively interposed between said column member and said instrument head; support prongs on said instrument head projecting into said column member, and roller means and slide blocks mounted on said supporting prongs, said column member having a cross sectional U-profile presenting a web, a pair of side flanges, and a pair of end flanges connected, respectively, to the outer, longitudinal ends of said side flanges and extending inwardly therefrom in generally parallel relation to said web, said roller means being mounted on said prongs so as to bear against the inside surface of said web, and said slide blocks being mounted on said prongs so as to bear against the inside surfaces of said side and end flanges.

3,862,735
ROTATABLE DISPLAY RACK HAVING VERTICAL ADJUSTMENT THEREFOR
Maurice Cohen, 3580 N.S. 52nd St., Miami, Fla. 33142
Filed Apr. 20, 1973, Ser. No. 353,199
Int. Cl. A47b *81/00, 49/00;* A47f *5/02*
U.S. Cl. 248—405 **9 Claims**

1. A display rack, comprising a base, a tubular support member mounted on said base in vertical relation, a shaft located in said support member and having an upper portion that projects thereabove, said shaft being interengaged with said tubular support member so as to be vertically adjustable

with respect thereto, a display assembly mounted on the upper portion of said shaft, means for vertically adjusting the position of said shaft with respect to said tubular support member wherein the vertical position of said display assembly is adjusted, said adjusting means including a clutch member that is located in coaxial relation in said shaft and that is longitudinally movable relative thereto for interengagement therewith, means fixed to said display assembly for receiving said clutch



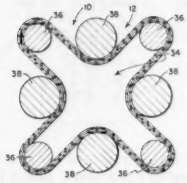
member in engaging relation, wherein said clutch member interlocks said display assembly to said shaft, and means for moving said clutch member in a longitudinal and axial direction relative to said shaft to the engaging position thereof, whereafter rotation of said display assembly produces a corresponding rotation and vertical movement of said shaft with respect to said tubular member to adjust said display assembly in a required vertical position.

3,862,736

DEVICE FOR FORMING POLYGONAL VOIDS IN CONCRETE MEMBERS

Richard E. Herro, Joliet, Ill., assignor to Dearborn Rubber Corporation, Broadview, Ill.

Filed Jan. 4, 1973, Ser. No. 321,007
Int. Cl. B28b 7/32
U.S. Cl. 249—65 **8 Claims**



1. A core for use in casting hollow concrete members comprising

a first, elongated, inflatable body formed of at least two elastomeric layers separated by a double layer of reinforcing fabric,

means for sealing the ends of said first body, and

means for admitting a pressurized medium to the interior of said first body,

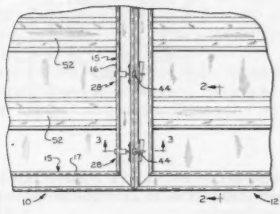
said first body in its unpressurized condition having a substantially cloverleaf shape of a first cross-sectional area and in its pressurized condition being capable of maintaining a substantially polygonal shape of a second cross-sectional area substantially greater than said first cross-sectional area without the necessity of any additional support.

3,862,737

CONCRETE FORM PANELS AND LOCKING MEANS THEREFOR

Brantley Fuston, Jr., Stockbridge, Mich., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed Oct. 1, 1973, Ser. No. 402,265
Int. Cl. E04g 17/04
U.S. Cl. 249—196 **12 Claims**



1. Concrete form apparatus comprising a flat panel having on one side a surface against which concrete can be poured and on the other side a U-shaped channel means extending around and located adjacent to the marginal edges of the panel, said U-shaped channel means having a base affixed to said other side of said panel so that the channel means opens in a direction away from said panel and provides inner and outer channel walls, said channel walls having associated holes therein in axial alignment at spaced longitudinal intervals, and locking means positioned in said U-shaped channel means extending through associated aligned holes for transverse movement with respect to the channel means between retracted and extended positions, each said locking means being operable when in its extended position to provide an extended end which projects beyond the marginal edge so that each locking means can be locked in a hole of a channel means in a next adjacent concrete form apparatus, and each said locking means including a retainer portion extending cross-wise thereof and located for movement in said U-shaped channel means for abutment against said outer channel wall when the locking means is in said extended position and for operable abutment relative to said inner channel wall when the locking means is in its retracted position so as to preclude removal of said locking means from said U-shaped channel means.

3,862,738

TWO-WAY VALVE OF THE SEATED TYPE

Fritz Stumpmeier, Neu-Ulm, Germany, assignor to Hydromatik GmbH, Ulm/Donau, Germany

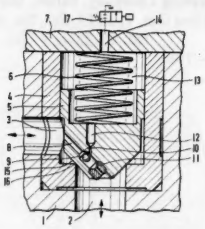
Filed Apr. 3, 1973, Ser. No. 347,432
Claims priority, application Germany, Apr. 17, 1972, 2218540; May 19, 1973, 2224576
Int. Cl. F16k 31/383
U.S. Cl. 251—43 **6 Claims**

1. In a shutoff valve for changing directions of flow between two connections which each may optionally serve as inlet or outlet and of the kind in whichg a valve piston with a conical sealing surface is urged by spring pressure onto a valve seat and a counterpressure chamber acts on the side of the valve piston facing away from the piston seat and communicates with the higher pressure side of the valve and is connected with an externally controlled pilot valve through which the pressure medium may be drawn off to cause the pressure medium on the higher pressure side of the valve to raise the valve piston from its seat, the improvement comprising,

a single conduit disposed within the valve piston and open at one end to one of said connections and open at the other end to the other of said connections,

said conduit having a single shuttle valve element and two spaced apart seats for the single shuttle valve element with each seat associated with one of said two connec-

tions to block flow through the conduit to one connection when the shuttle valve element is seated on a related seat, and a branch duct also disposed with the valve piston and



connected at one end to said conduit between said two seats and connectable at an opposite end to the counter-pressure chamber.

3,862,739

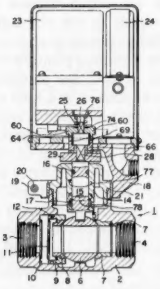
ELECTRICALLY DRIVEN VALVE APPARATUS

Katsuji Fujiwara, No. 191 Nishitami, Hiraoka-cho, Kakogawa-shi Hyogen-ken, Japan

Division of Ser. No. 39,442, May 21, 1970, Pat. No. 3,680,831. This application Mar. 27, 1972, Ser. No. 238,691

Int. Cl. F16k *31/04*

U.S. Cl. 251—130 **5 Claims**



1. An electrically operated valve apparatus comprising: valve means having two predetermined different operative positions; an electric motor operatively connected to said valve means and adapted to be electrically operated to drive said valve means to said predetermined operative positions; an electric control circuit connected to said motor for controlling the operation thereof, said electric control circuit comprising a power source, control switching means electrically connected to said power source and adapted to take two different states at output contacts thereof, wherein at one state said electric motor is operated to drive said valve means to one of said two operative positions and, at the other state said electric motor is operated to drive said valve to the other operative positions; positioning switch means electrically connected to said motor and said control switching means for automatically stopping the operation of said electric motor when said valve attains either one of said predetermined operative positions; wherein said valve means comprises:

a ball-like valve element having a transverse passage which can be communicated with a fluid line system to be controlled by said valve apparatus in one of said operative positions thereof and disconnected from said fluid line in said other operative position, said valve element being rotatable around a diametrical axis normal to the axis of said passage, a pair of valve seats disposed in parallel with said diametrical axis to rotatably support said valve element sandwiched between said seats, one of which is fixed, while the other seat is mounted movably and forced to bear against bear ball-like element under a resilient pressure, and a valve stem which extends along said diametrical axis and is operationally connected to said valve element and said electric motor to thereby transmit the driving power thereof to said valve element, and said positioning switch means comprises:

a disk coaxially mounted on said connecting member and having a pair of switch actuating means provided in the periphery of said disk in diametrical opposition to each other,

a pair of switches disposed around the periphery of said disk with angular space of 90° therebetween said switches being adapted to be alternatively opened every time when said actuating means has attained positions which correspond to said operative positions of said valve, and

electric connections for connecting each of said positioning switches at one side thereof to each of said output contacts of said control switch and connecting said motor to both of said positioning switches at the other side thereof.

3,862,740

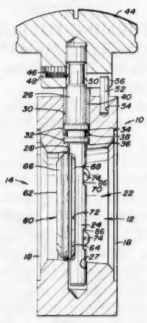
BUTTERFLY VALVE

Bernard J. Gallagher; Earl D. Shufflebarger, both of Mentor; David M. Simko, Parma Heights; Frank M. Cunningham, Euclid, and Oliver L. Danko, Chesterland, all of Ohio, assignors to Nupro Company, Cleveland, Ohio

Filed July 5, 1973, Ser. No. 376,684

Int. Cl. F16k *1/22*

U.S. Cl. 251—305 **9 Claims**



1. A butterfly valve particularly suited for use in vacuum systems comprising:

a generally cylindrical metallic body with an axially extending through-flow passage having an inlet and an outlet, said passage having a portion which tapers uniformly from a first diameter D to a second smaller diameter d;

an operating stem extending radially into said body and diametrically across said passage, said stem being generally cylindrical with a first end being freely and rotatably received in a first bore extending from said passage into said body and a second end received in and extending out of said body through a second bore aligned with and diametrically opposed to said first bore, said second bore being counterbored inwardly from the exterior of said body to provide an annular space about said stem, said space terminating in an annular shoulder adjacent said passageway;

a pair of spaced flanges carried by said stem at a location within said annular space, the innermost of said flanges

resting on and engaging said shoulder and positioning said stem in directions radially of said passageway;

a stem seal positioned between said flanges and providing a fluid seal between said stem and the walls of said counterbore;

a stem bearing sleeve member snugly fitted within said second bore radially outwardly of the outermost flange, said sleeve member having an inner end which engages the outermost flange to maintain said stem positioned against radial movement relative to said passageway;

a valve member comprising a metal disk having a resilient elastomeric seal member carried on its outer circular periphery, the seal member having an outer diameter v which is slightly greater than the second smaller diameter *d*, said disk having a connecting face parallel to and spaced from the plane of said periphery;

a flat formed on the portion of said stem which extends across said passageway, said flat being parallel to the axis of said stem;

connecting means releasably connecting said disk to said stem with the connecting face of said disk in engagement with the flat on said stem, said stem being located at a position such that when said stem is rotated to place its flat perpendicular to the axis of said passageway, said periphery of said valve member compressibly engages said passageway continously about a circumferential line lying in a plane perpendicular to the axis of said passageway within said uniformly tapered portion and closely adjacent the diameter *d;* and,

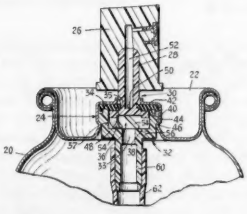
the length of said body being slightly less than the diameter v of said valve member.

3,862,741

AXIAL-MOVEMENT TYPE SPRINGLESS VALVE

Wolf Steiman, and Steven W. Beres, both of Bridgeport, Conn., assignors to VCA Corporation, Greenwich, Conn.

Filed June 29, 1973, Ser. No. 375,017
Int. Cl. F16k *31/58;* B65d *83/14*
U.S. Cl. 25—353 **4 Claims**



1. A valve construction for an aerosol dispenser, comprising in combination:

a. a valve housing having a chamber for receiving liquid from a container, said chamber having an annular inner wall surface, and having an unyielding transverse wall including a solid portion defining one side of said chamber,

b. a resilient, apertured valve seat constituting an opposite side of said chamber,

c. a valve part having a hollow shank portion extending through the aperture of the valve seat,

d. said valve part having an annular valve shoulder disposed in the liquid-receiving chamber of the housing and engageable with the resilient valve seat to close the aperture thereof,

e. said valve part being elongate, having a longitudinal axis and having a side passage disposed adjacent the valve shoulder and communicating with the hollow of the shank portion, said part further having a plurality of sloped, yieldable, integral fingers, each of which lies substantially along a helical path, said fingers having rounded end portions which are engageable with and slidable on the transverse wall of the valve housing when the valve part is shifted axially with respect to the housing, said fingers being elongate and lying substantially along a constant radius with respect to the axis of the valve part, and being closely confined by the annular wall surface of the chamber, to be guided thereby,

f. the shifting of the valve part in one direction flexing said elongate fingers and unseating the shoulder of the part from the valve seat whereby liquid from the chamber can flow into the hollow shank portion through the said side passage,

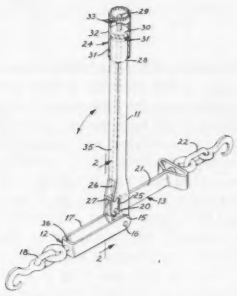
g. said fingers of the valve part normally supporting the part on the transverse wall of the valve housing with the valve shoulder engaged with said resilient valve seat.

3,862,742

ADJUSTABLE TENSIONING DEVICE

Glenn M. James, Rt. 1, Freshwater Bay Rd., Port Angeles, Wash. 98362

Filed Jan. 30, 1974, Ser. No. 437,867
Int. Cl. B66f *3/00*
U.S. Cl. 254—78 **2 Claims**



1. An adjustable tensioning device for operatively connecting and applying a pulling force between two spaced workpieces comprising:

an elongated lever arm;

first workpiece engaging means pivotably mounted by a first fulcrum pin to the lever arm along a first fulcrum axis adjacent one end of the lever arm for extending to one side thereof to engage a first workpiece;

second workpiece engaging means pivotably mounted by a second fulcrum pin to the lever arm along a second fulcrum axis adjacent the one end of the lever arm and spaced longitudinally thereon from the first fulcrum axis, for extending to an opposite side of the lever arm to engage a second workpiece;

the lever arm being manually operable to pivot relative to the first and second workpiece engaging means to move the fulcrum pins relative to each other in opposite directions to an over dead center position relative to each other and the lever arm to apply opposing pulling forces to the workpieces;

releasable securing means comprising an abutment surface on the lever arm engageable with a complementary surface on one of the workpiece engaging means when the fulcrum pins are moved to the over dead center position to limit further pivotal movement of the lever arm and thereby releasably secure the lever arms to the one workpiece engaging means; and

adjusting means operatively connecting one workpiece engaging means with the lever arm for manually adjusting the longitudinal distance between the fulcrum axes while

the lever is operated to apply said opposed pulling forces to the workpieces.

3,862,743

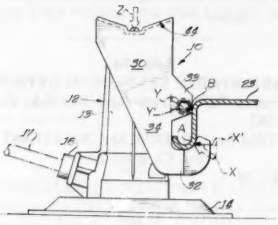
VERTICAL STRESS-SIDE LOAD MEMBER SCREW JACK

Richard S. Graafsma, Benton Harborr; R. Harlan Nehrig, Stevensville, and Nicholas J. White, St. Joseph, all of Mich., assignors to Auto Specialties Manufacturing Company, St. Joseph, Mich.

Continuation-in-part of Ser. No. 370,793, June 18, 1973, abandoned. This application Mar. 4, 1974, Ser. No. 447,760

Int. Cl. B66f *3/36*

U.S. Cl. 254—100 **13 Claims**



1. A jack adapted to lift a load from a side position, including a base means, a first member at least partially extensible from and retractible into the base means for raising and lowering a load relative to the base means, and a side load member including a portion overlying and resting directly on top of said first member in direct load transferring relationship thereto, the side load member including hook means depending from said portion for engaging the load at a first location and receiving a first force vector component imparted by the load from a direction perpendicular to the extensible and retractible member, and bumper means for engaging the load at a second location and receiving a second force vector component imparted by the load from a direction perpendicular to the extensible and retractible member and opposite to the first force vector component, and axially extending non-load bearing pin means connecting said attachment portion to the upper end of said first member for pivotal movement about a horizontal axis.

3,862,744

AUTOMATIC LOCKING OF HIGH-LEVEL LUMINAIRES

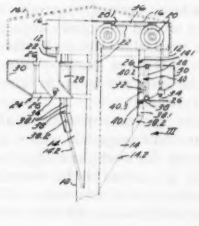
Curt Carl Boemer, P.O. Box 17028, Pretoria, South Africa

Filed Oct. 31, 1973, Ser. No. 411,215

Claims priority, application South Africa, Nov. 6, 1972, 72/7861

Int. Cl. F21v *21/38*

U.S. Cl. 254—148 **2 Claims**



1. Means for positively supporting a member, having a centre opening and suspended from hoisting ropes at an elevated position around a mast, which includes

a similar number of co-acting first and second parts rigid with the mast and the member;

each first part comprising a substantially vertically disposed mounting plate having a pair of transversely spaced and outwardly projecting guide ribs, a sloping guide-in portion at the lower end of the mounting plate, and a bracket of connected rigid fins arranged according to a sloping Z which is secured by one face to the mounting plate in spaced relationship between the spaced ribs and presenting a pair of connected spaced and sloping radially disposed faces at different heights and a recess between said pair of faces; whereas

each co-acting second part comprising a robust cantilever pin;

the arrangement being such that during the final stage of hoisting of the member the pins are received with clearance between the guide ribs and are drawn onto sloping underfaces of the lower fins of the brackets whereby rotational movement is applied to the member and deflection of the hoisting ropes against gravitational bias by a camming action which is followed by a reverse movement of the member and the ropes by the gravitational bias on disengagement of the pins from the sloping faces and, on lowering of the member, the pins are received in the recesses for support of the member while, for lowering of the member, the member is lifted by the hoisting ropes and by camming with the underfaces of the upper fins of the brackets rotational movement is applied to the member and deflection of the ropes against gravitational bias and on movement of the pins across the upper ends of the said fins a reverse rotational movement is applied to the member by gravitational bias whereafter the member is lowerable.

3,862,745

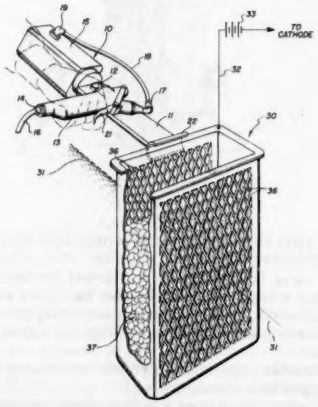
ANODE BASKET VIBRATOR

Donald A. Chiz, Midlothian, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jan. 9, 1974, Ser. No. 432,015

Int. Cl. B01f *11/00*

U.S. Cl. 259—1 R **3 Claims**



1. Portable apparatus for vibrating an electrically conductive anode basket containing a supply of particulate anode material in an electroplating process, said apparatus comprising:

an elongated rigid arm;

a pneumatic gun mounted on said arm between the ends thereof, said gun having inlet means for supplying a stream of compressed fluid to said gun, outlet means for said stream of compressed fluid and valve means for

controlling the flow of said compressed fluid through said gun;

pneumatically actuated vibrator means connected to one of said ends of said arm, whereby actuation of said vibrator means produces a vibratory motion along the longitudinal axis of said arm;

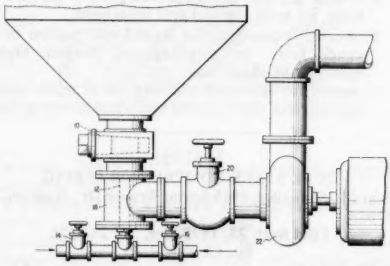
conduit means leading from said outlet means of said air gun to said vibrator means for supplying a stream of compressed fluid to said vibrator means for the actuation thereof; and

contact means connected to the other said end of said arm adapted to bear against said anode basket and to impart vibrational movement to the contents thereof when said vibrator means is actuated.

3,862,746
SLURRY UNLOADING OF BULK ALKALINE EARTH METAL CARBONATES

Arvel O. Franz, and John Lawrence Gray, both of c/o Chemical Products Corp., Cartersville, Ga. 30120

Division of Ser. No. 141,971, May 10, 1971, , which is a continuation-in-part of Ser. No. 725,633, May 1, 1968, abandoned. This application June 7, 1973, Ser. No. 377,089
Int. Cl. B01f *13/02*
U.S. Cl. 259—4 **9 Claims**



1. In a process wherein an alkaline earth metal carbonate is contained in a storage container and removed therefrom as an aqueous slurry, the improvement which comprises steps of

a. storing said carbonate in the form of an autogenously dispersible carbonate composition consisting essentially of an alkaline earth metal carbonate and an ultra-hydrophilic dispersant, and further characterized as the product of essentially completely deflocculating, in water, said alkaline earth metal carbonate with said ultra-hydrophilic dispersant and drying said deflocculated alkaline earth metal carbonate under conditions which are non-destructive of said ultra-hydrophilic dispersant, said ultra-hydrophilic dispersant being material producing a true solution thereof in water and causing relatively rapid imbibition of 8.5 ml. of water by 25 grams of dried alkaline earth metal after said carbonate has been deflocculated in water by 0.25% or less by weight of said dispersant, dried and ground, said dried carbonate demonstrating fluidity after the addition of about 6 ml. of said water;

b. introducing an aqueous liquid into the mass of acid carbonate composition at a point in said container below the major mass of said carbonate composition;

c. continuing said aqueous liquid introduction until the amount of said aqueous liquid is sufficient to provide a fluid slurry of said carbonate;

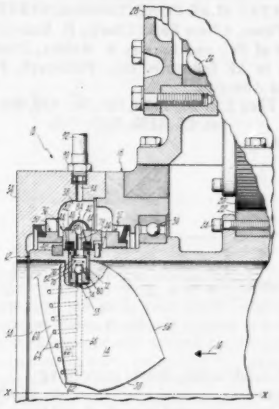
d. introducing non-reactive gas under pressure into the mass of said carbonate and aqueous liquid at a point near the bottom of said storage container at the conclusion of step (c) to effect substantial homogenization of said carbonate composition and aqueous liquid to form a generally uniform slurry thereof; and

e. removing said slurry from said storage container.

3,862,747
ADDITIVE DIFFUSOR

Harvey E. Richter, Farmington, Conn., assignor to The Tec Group, Inc., Bloomfield, Conn.

Filed Aug. 14, 1972, Ser. No. 280,675
Int. Cl. B01f *5/12, 7/06*
U.S. Cl. 259—10 **6 Claims**



1. In a generally cylindrical rotor having a flow passageway therethrough and an impeller blade mounted on and projecting generally radially inwardly from an inside wall of the rotor which is supported on a generally cylindrical housing for rotation about an axis of rotation of the rotor, an additive diffusor comprising a dispersion outlet carried by the impeller blade, an additive supply source, passage means in the rotor communicating the dispersion outlet with the additive supply source for dispersion of an additive into the flow passageway, and an additive control in the passage means for controlling additive flow, the additive control being movable between a first position normally blocking additive flow and a second position permitting additive flow through the passage means, the additive control being movable from said first position into said second position responsive to rotor rotation.

3,862,748
MIXING MATERIALS IN CONTAINERS

Frederick G. J. Grise, General Delivery, East Falmouth, Mass. 02536, and Walter Lovell, Mountain Rd., Wilbraham, Mass 01095

Filed Sept. 24, 1973, Ser. No. 399,862
Int. Cl. B01f *7/16*
U.S. Cl. 259—122 **14 Claims**

1. A container for materials to be mixed, said container being completely closed, a diaphragm on a wall of the container,

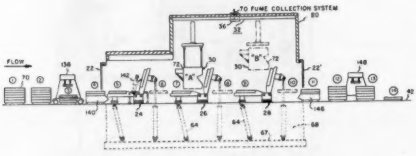
a relatively sharp single needle, the sharp end of which is located at an angle with respect to the remainder thereof, said needle being adapted to pass through the diaphragm for insertion into the container, and means to rotate the needle in the wholly closed container.

3,862,749

METAL SLAB CONDITIONING SYSTEM

Arthur H. Fieser, Allison Park; Charles H. Anderson, McMurray, both of Pa., and Loreley S. Mobley, Franklin, Ohio, assignors to AF Industries Inc., Pittsburgh, Pa., by said Fieser and Anderson

Filed Jan. 30, 1974, Ser. No. 438,008
Int. Cl. B23k *7/00, 7/06*
U.S. Cl. 148—9.5 **11 Claims**



1. A slab conditioning system comprising:
at least two bases spaced apart from one another;
a pair of leaves mounted to each of said bases, each of said leaves being pivotally mounted for independent rotation from a substantially horizontal position to an upright position, each of said leaves being adapted to support a slab and cooperate with the other leaf of said pair by rotation toward one another for transferring said slab from one leaf of said pair to the other, and said leaves being further adapted for transferring a slab from one to the other of adjoining leaves of adjacent pairs of said leaves while said adjoining leaves are in their respective horizontal positions;
means for independently rotating said leaves; and
at least one slab conditioning tool platform mounted above said bases and adapted for motion with respect to said leaves.

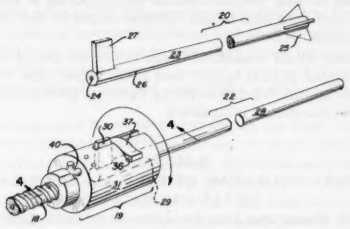
11. A method for conditioning metal slabs comprising:
A. delivering a slab to a first rotatable slab support means from a first direction;
B. rotating said first slab support means to incline the top surface of said slab;
C. inspecting said top surface of said slab for surface defects;
D. transferring said slab from said first slab support means to a second rotatable slab support means;
E. rotating said second slab support means to incline the bottom surface of said slab;
F. inspecting said bottom surface of said slab for surface defects;
G. transferring said slab to a third rotatable slab support means;
H. transferring said slab to a fourth rotatable slab support means and inclining said slab thereon to expose said top surface of said slab;
J. traversing said top surface of said slab with a conditioning tool to selectively remove said surface defects;
K. transferring said slab to a fifth rotatable slab support means;
L. transferring said slab to a sixth rotatable slab support means and inclining said slab thereon to expose said bottom surface of said slab;
M. traversing said bottom surface of said slab with a conditioning tool to selectively remove said surface defects; and
N. discharging said slab from said sixth slab support means in a direction opposite from said first direction.

3,862,750

TOPHOLE OPENING APPARATUS

Gilbert R. Broom, Gary, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed Oct. 17, 1972, Ser. No. 298,269
Int. Cl. C21b *7/12*
U.S. Cl. 266—42 **10 Claims**



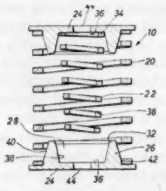
1. In combination:
a drill having a drill shankpiece;
a taphole-opening tool having a flanged shank; and,
a chuck comprising a chuck body having first and second opposed end portions, said chuck body including:
a. means, disposed at the first end portion of said chuck body, for receiving said drill shankpiece;
b. means, disposed at the second end portion of said chuck body, for receiving said flanged, taphole-opening tool shank; and,
c. means for releasably securing the flanged, taphole-opening tool shank in said tool shankreceiving means.

3,862,751

DUAL STAGE COMPRESSOR SPRING

Bernard L. Schwaller, 8918 Spring Branch Dr., Houston, Tex. 77055

Filed Sept. 28, 1972, Ser. No. 293,086
Int. Cl. F16f *1/26*
U.S. Cl. 267—91 **5 Claims**



1. A dual stage spring assembly for compressor valves, said spring assembly comprising:
generally cylindrical outer compression spring;
a pair of spring buttons being disposed one at each extremity of said outer spring;
hub means being provided on each of said buttons and being received in frictional engagement within respective extremities of said outer spring;
inner compression spring means disposed within said outer spring means and being supported at a first extremity thereof by one of said buttons with a second extremity thereof being spaced from the other of said buttons during an initial portion of the compression of said spring assembly, allowing said outer spring means to develop a first resistance to compression at a first spring rate during said initial portion of the compression of said spring assembly and said opposite extremity of said inner spring contacting the other of said buttons and cooperating with said outer compression spring to develop a second greater resistance to compression at a second spring rate during

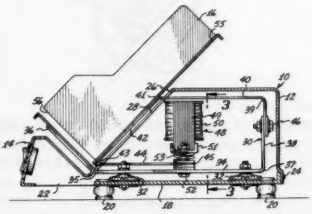
the remaining portion of the compression of said spring assembly, said second compression spring being of generally frusto-conical configuration, said first extremity of said inner compression spring being of larger dimension than said second extremity, said first extremity being frictionally retained by one of said hub means; and

a cam surface being defined on said hub means and being disposed for camming engagement by said second extremity of said inner compression spring means for aligning said inner spring during compression of said spring assembly in the event misalignment of said inner spring should occur.

3,862,752
JOGGING DEVICE

Cecil R. Totten, 3344 E. Paradise Dr., Phoenix, Ariz. 85028

Filed Nov. 20, 1973, Ser. No. 417,491
Int. Cl. B65h *1/02, 31/38*
U.S. Cl. 271—210 **6 Claims**



1. a device for producing a jogging movement comprising:

a. a mounting plate;

b. a plurality of shock mounts attached to said mounting plate;

c. a resilient distortable member mounted on said shock mounts and shaped to have a first and a second jogging surfaces positioned adjacent each other and angularly disposed with respect to each other, said distortable member adapted to change the angular relationship between the first and the second jogging surfaces thereof upon distortion of said distortable member;

d. means mounted on said distortable member for producing distortion thereof; and

e. said resilient distortable member is a unitary structure shaped into a closed loop configuration which comprises, a mounting surface from which the first jogging surface extends and upon which said means is mounted, an attractable surface substantially parallel to the mounting surface and from which said second jogging surface extends, the mounting surface and the attractable surface of said distortable member both moving when said means applies a distorting force thereto and both rebounding when the distorting force is interrupted.

3,862,753
LATERAL EDGE PAPER GUIDE

Norman L. Giorgini, West St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 311,810, Dec. 4, 1972, abandoned. This application Feb. 13, 1974, Ser. No. 441,963
Int. Cl. B65h *1/12*
U.S. Cl. 271—171 **5 Claims**

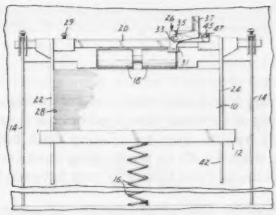
1. A guide for the lateral edges of a stack of sheets of paper supported on a tray with the transverse edges thereof horizontal, said guide comprising:

means defining a first planar guide surface perpendicular to said tray to guide one lateral edge of the stack of sheets, a support and locking bar extending over said tray and the stack of sheets parallel to the transverse edges of the sheets,

a guide support frame mounted on and slidable along said support and locking bar,

means for releasably locking said guide support frame to said support and locking bar,

a guide plate having a planar surface defining a second guide surface for contacting and guiding the second lateral edge of the stack of sheets,



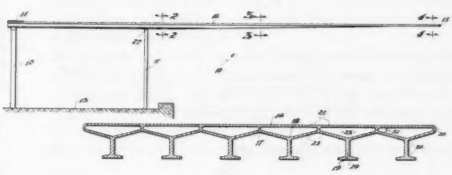
means supporting said guide plate for movement with said guide support frame along said support and locking bar and for inclination of said second planar guide surface relative to said support and locking bar away from said first guide surface when said second guide surface is in contact with the second lateral edge of the stack of sheets, and

means for resiliently urging said guide plate to bias said second guide surface toward contact with the second lateral edge of the stack of sheets.

3,862,754
METAL SPRINGBOARD

James A. Patterson, 2230 Cambridge Boulevard, Columbus, Ohio 43221

Filed Oct. 13, 1971, Ser. No. 188,798
Int. Cl. A63b *5/10*
U.S. Cl. 272—66 **2 Claims**



1. A metal springboard comprising,

a plurality of elongated longitudinal members extruded integrally with each other, said longitudinal members being triangularly shaped hollow tubes of constant wall thickness,

said members extending transversely to the longitudinal axis such that the apex of each triangularly shaped member is disposed downward to form the underside of the springboard and the base opposite the apex is disposed in a horizontal plane,

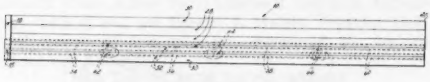
said bases being mutually co-planar and forming the upper surface of the board,

said members integrally joined to each adjacent member at a cross-sectional angle other than the apex angle to form an elongated, thin, narrow board.

3,862,755
EXTRUDED DIVING BOARD

John F. Ogden, 3005 Olive St., Columbus, Ohio 43204

Filed Apr. 1, 1974, Ser. No. 456,840
Int. Cl. A63b 5/10
U.S. Cl. 272—66 19 Claims

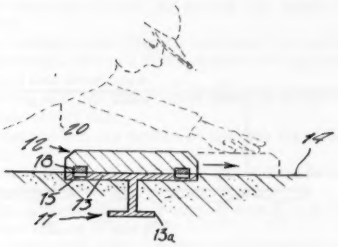


1. A diving board comprising, in combination:
a plurality of identical elongated hollow members disposed in side-by-side abutting relation, said hollow members being shaped with an unchanging cross section along the length thereof and forming a bore between abutting members;
a plurality of elongated tubular members, each tubular member having an unchanging wall thickness along its length and an outer surface shaped to fit into any said bore, said tubular members being disposed in end-to-end relation within each said bore with the wall thickness of adjacent tubular members disposed in the same bore being different;
means for securing said hollow members and said tubular members together to form the diving board.

3,862,756
MAGNETICALLY ATTACHED BASEBALL BASE

Conrad J. Selliken, P. O. Box 23114, Portland, Oreg. 97233

Filed Jan. 2, 1974, Ser. No. 429,892
Int. Cl. A63b 71/00
U.S. Cl. 273—25 5 Claims



1. A baseball base comprising
a. a first member having a top plate,
b. means depending from said top plate arranged to anchor said plate in base position with the upper surface thereof substantially flush with the ground,
c. a second member having a size and shape substantially corresponding to that of the usual baseball base portion,
d. said second member having a bottom surface arranged to overlie the upper surface of said first member in its installed base position,
e. and magnetic holding means in the upper surface of said first member and the bottom surface of said second member arranged to normally hold said two members together but to allow them to separate under unusual force conditions.

3,862,757
TETHERED BALL

William A. Craig, II, P. O. Box 81, Angwin, Calif. 94508

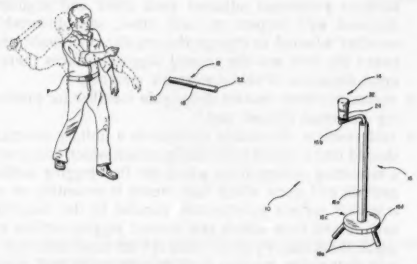
Filed Oct. 9, 1973, Ser. No. 404,338
Int. Cl. A63b 43/02
U.S. Cl. 273—58 C 7 Claims

1. A ball device consisting of
a resilient ball of a unitary material formed around one end of a resilient cord, said cord being integrally fused at said end to the central interior of said ball, said cord being resilient throughout its length.

3,862,758
HAND HURLING OBJECT, TARGET BASE AND TARGET

Jessie Robert McLamb, 6220 Cartertowne Cir., Raleigh, N.C. 27603

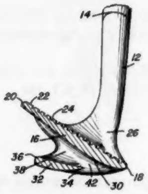
Filed Apr. 13, 1973, Ser. No. 350,748
Int. Cl. A63b 71/02
U.S. Cl. 273—95 R 1 Claim



1. A hand hurling, tip-over amusement device comprising: support means including a base having a plurality of legs depending therefrom, said plurality of legs including three legs depending from said base to form a tripod support structure, an upright support post, and an elbow extending radially from a top portion of said support post and having a horizontal support surface for supporting a tip-over object; a tip-over target object normally supported in an erect position on said support means, said tip-over target object includes a base portion having a generally flat bottom, a top edge, a cylindrical wall extending between said bottom of said base portion and said top edge with said wall being tapered inwardly and downwardly from said top edge to the bottom of said base such that the upper portion of said base is of greater diameter than the lower portion; an upper main head integrally formed with said base and extending upwardly from the top edge thereof, said main head including a generally cylindrical main body portion and a rounded top edge; and a generally cylindri-

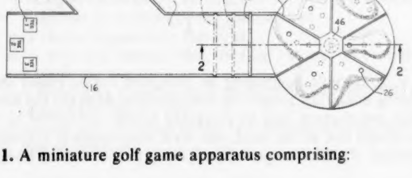
cal head hurling object adapted to be hurled toward said tip-over object from a point located a predetermined distance from said tip-over object, whereby said hand hurling object may be hurled by an individual toward said tip-over object with the intent of striking said tip-over object and tipping it from its normal erect position.

3,862,759
WEDGE TYPE GOLF CLUB
Frank E. Evans, and Dorothy D. Evans, 645 Cheowa Circle, both of Knoxville, Tenn. 37919
Filed July 12, 1973, Ser. No. 378,387
Int. Cl. A63b *53/04*
U.S. Cl. 273—167 A **4 Claims**



1. A golf club head comprising a wedge-type body having an upwardly and rearwardly inclined ball engaging face and an undersurface which generally parallels the ball engaging face, a shank at one end of said body for connection with a golf club handle shaft, said body including a lower leading edge and a trailing edge disposed above the horizontal plane of the leading edge, and a sole attached to the undersurface of the body in downwardly spaced relation thereto providing a support for engaging a surface on which a golf ball lies to control the positioning of the golf ball engaging face in relation to the golf ball to enable the golf ball to be lofted onto a putting green from a sand trap, fairway or the like, said sole being spaced from the undersurface of the body substantially throughout its length to provide passage for sand or other supporting material for the golf ball to reduce the engagement of such material with the ball engaging face of the club head, said sole being connected to the underface of the club head body at each end thereof by vertically disposed webs having tapering and rounded end edges, said sole being spaced completely rearwardly of the leading edge and completely forwardly of the trailing edge of the club head body and having a relatively thin vertical dimension at its leading edge and a thicker vertical dimension at its trailing edge.

3,862,760
MINIATURE GOLF GAME
F. Darell Davis, 1773 Edmund Rd., Cayce, S.C. 29033
Filed Dec. 13, 1973, Ser. No. 424,471
Int. Cl. A63b *69/36*
U.S. Cl. 273—176 E **4 Claims**



1. A miniature golf game apparatus comprising:

an elongated driveway surface;

ball positioning means carried adjacent one end of said elongated driveway for holding a ball to be putted;

a rotatable supporting member carried adjacent the other end of said driveway surface;

a plurality of substantially pie-shaped removable inserts positioned side-by-side on said rotatable supporting member defining a circular playing surface;

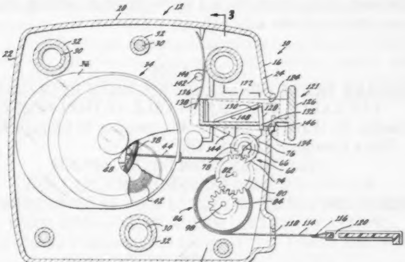
contoured surfaces carried on each of said insert simulating various putting surfaces;

a ball receiving cup carried in each of said pie-shaped inserts; and

dividers carried between said pie-shaped inserts for defining putting areas;

whereby by rotating said rotatable supporting member selective putting areas can be brought in alignment with said elongated driveway and said pie-shaped inserts can be changed for varying the layout of said game.

3,862,761
TALKING TAPE MEASURE
Dwain D. Conley, Huntington Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 15, 1973, Ser. No. 416,146
Int. Cl. G11b *15/42*
U.S. Cl. 274—1 A **2 Claims**



1. A talking tape measure toy, comprising:

a phonograph device having a drawstring, said drawstring having a free end which may be pulled to withdraw said drawstring from said phonograph device for energizing said phonograph device;

a string drum rotatably mounted adjacent said phonograph device, said free end of said drawstring being attached to said string drum, whereby said drawstring may be withdrawn from said phonograph device by winding said drawstring onto said string drum;

a tape-measure drum rotatably mounted adjacent said string drum;

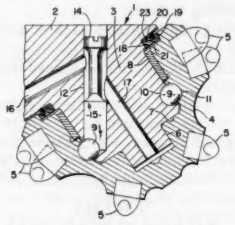
a tape measure having one end secured to said tape-measure drum; and

gear means connecting said tape-measure drum to said string drum in such a manner that winding energy administered to one of said drums is transferred to the other of said drums.

3,862,762
SEAL FOR DRILL BIT BEARINGS
Norman E. Millsap, Sandy, Utah, assignor to Parken-Hannifin, Salt Lake City, Utah
Filed Feb. 26, 1973, Ser. No. 335,663
Int. Cl. F16j *15/34;* **F16c** *19/49*
U.S. Cl. 277—92 **11 Claims**

1. A seal for drill bit bearings of the type wherein a shaft and a cutter rotatably supported on said shaft by bearing means therebetween define therebetween an annular packing chamber including concentric radially spaced apart side walls and

axially spaced apart annular end walls; said seal comprising a ring of resilient material having inside and outside diameters in resilient pressure engagement with said side walls respectively to constitute static and dynamic seals thereat, effective to seal bearing lubricant between said shaft and cutter, said dynamic seal comprising an annular lip on said ring in resilient pressure engagement with one of said side walls; said ring



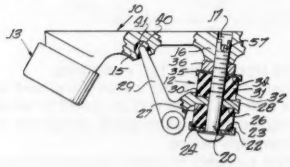
having an annular groove on the side thereof adjacent to the end wall of said shaft to define said lip; and a packing ring of rubber-like material disposed in said groove in sealing engagement with the end wall of said shaft, said packing ring implementing the resilience of said lip in achieving and maintaining pressure engagement of said lip in dynamic sealing engagement with said one side wall.

3,862,763

ROLLER SKATE CONSTRUCTION WITH RELEASABLY, LOCKABLE AND ADJUSTABLE ACTION SCREW

Gordon K. Ware, St. Charles, Ill., assignor to Chicago Roller Skate Company, Chicago, Ill.

Filed Oct. 25, 1973, Ser. No. 409,634
Int. Cl. A63c *17/02*
U.S. Cl. 280—11.28 **1 Claim**



1. A roller skate comprising a wheel support unit including a normally undisplaced axle and a sole plate having a downwardly extending threaded embossment and a single cotter pin hole oriented transversely to the embossment and a threaded and slotted action screw for retaining a wheel support assembly on the sole plate, the screw slot being oriented diametrically across the end of the screw and extending in depth across a plurality of convolutions of screw thread, and cotter pin means for securing the action screw in any one of a limited, finite, integral number of positions upon the sole plate with the screw slot aligned with the sole plate hole, the wheel support unit further including resilient compressive action means mounted upon said slotted action screw, a jamb nut threadably received upon said action screw between said sole plate and said compressive action means and turnable on said screw through an infinite number of positions relative to said screw for imparting various preloads to said compressive members and primarily retaining said action screw and compressive members in said preloaded condition, said cotter pin means acting to secondarily retain said action screw, said compressive means and said jamb nut in any one of a limited, finite, integral number of respective retained positions thereby providing the skate user with any one of a corresponding number of skate motions relative to the sole plate when a given force is applied to the skate in a given direction.

3,862,764

PARALLEL ATTACHMENT FOR SKIS

Billy J. Hartz, 4016 N. E. 110th, Seattle, Wash. 98125

Filed Sept. 8, 1972, Ser. No. 287,366
Int. Cl. A63c *11/00*
U.S. Cl. 280—11.37 E **11 Claims**

1. A framework apparatus for restraining and limiting relative movement of alpine skis whereby said skis may move relatively fore and aft, individually rotate about a longitudinal axis and move in limited skew relationship to accommodate snow surface irregularities while maintaining said skis in a substantially parallel relationship, comprising:

two elongated members, each positioned forwardly of ski bindings on said skis and positioned substantially parallel to each other, each member having front and rear mounting means for removably attaching said members to the upper surface of a pair of alpine skis; and,

resilient linkage means extending between said two elongated members, said resilient linkage means including track and slide means permitting relative fore and aft movement of said two members and resilient bridging means which interconnects said track and slide means and said elongated members permitting limited skew movement of said elongated members while urging said two members into parallel relationship.

3,862,765

RUNNER-EQUIPPED SKI POLE

Byron R. Goheen, P. O. Box 425, Sun Valley, Idaho 83353

Filed Mar. 21, 1973, Ser. No. 343,298
Int. Cl. A63c *11/22*
U.S. Cl. 280—11.37 H **14 Claims**

1. A ski pole comprising an elongated basket-ended shaft having a laterally projecting strut thereon, adjacent the hand-held end thereof, and an elongated runner connected to the outboard end of the strut, the main longitudinally extending portion of which runner extends side by side with the body of

the shaft, but in spaced relationship to the shaft so that the skier's hand can encircle the shaft to assume a hold thereon, the longitudinal axes of the runner and the shaft being substantially coplanar with one another, but the outboard side of said main runner portion having a generally planar surface thereon, which is substantially perpendicular to the axial plane of the runner and the shaft, and adapted in relation to the body of the shaft, widthwise thereof in planes parallel to the surface, to serve as a freely slidable, ski-like bearing surface when the runner is placed on the snow, said strut and runner being constructed of a semi-rigid material adapted to sustain the weight of the skier, and to support the skier's hand above the snow, when the skier leans on the runner on the snow.

3,862,766

TANDEM RUNNER BOB SLED

Andrew Carlyle Bogdanovich, 1691 Edgewater La., Camarillo, Calif. 93010

Filed Feb. 15, 1974, Ser. No. 443,132

Int. Cl. B62b *13/04*

U.S. Cl. 280—16 **9 Claims**

1. A sled comprising:

a. a support framework including a depending strut;

b. a stationary rear runner fixed to the support framework and having a ski shaped forward portion and straight rearward portion.

c. a belly board connected along its longidutinal center line to the support framework, the plane of the belly board being inclined upwardly and forwardly between five and fifteen degrees with respect to the plane of the straight rearward portion of the rear runner;

d. a rearwardly inclined steering column swivelly coupled to the strut;

e. a steering bar connected to the steering column and aligned fully beneath the plane of the belly board and generally perpendicular to the strut;

f. a front runner aligned tandemly with respect to the rear runner and pivotally coupled to a bottom portion of the steering column, the front runner being arranged for being simultaneously turned with the steering column in response to rotation of the steering bar;

g. a sleeve slipped over the strut;

h. a web that mounts the steering bar and is positioned behind the sleeve;

i. a restraining collar secured to the strut and positioned to engage the sleeve; and,

j. handle grips coupled to the oppositely extending ends of the steering bar.

3,862,767

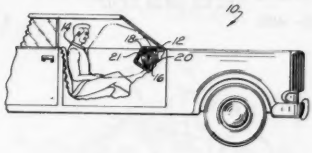
VEHICLE SAFETY APPARATUS HAVING EXPANDABLE CONFINEMENT

Richard Chute, Huntington Wood, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 849,394, Aug. 12, 1969, Pat. No. 3,638,964. This application Oct. 22, 1971, Ser. No. 191,656The portion of the term of this patent subsequent to Feb. 1, 1989, has been disclaimed.

Int. Cl. B60r *21/00*

U.S. Cl. 280—150 AB **7 Claims**



1. A safety apparatus for protecting an occupant of a vehicle during an accident, said safety apparatus comprising a confinement having a collapsed condition and an expanded condition for restraining an occupant of a vehicle, means actuatable for supplying fluid for inflating said confinement, conduit means defining a flow path for conducting the supplied fluid from said means for supplying fluid to said confinement, and valve means disposed in said conduit means, said valve means including means operably responsive to pressure in said flow path for controlling the rate of fluid flow therethrough.

3,862,768

ROLLABLE FULCRUM BALANCING BOARD RECREATIONAL AND EXERCISE DEVICE PROVIDED WITH NON-LINEAR STABILIZATION FEATURES

Will Clarke England, 1710 Eastcrest Dr., Austin, Tex. 98952

Filed Oct. 26, 1970, Ser. No. 83,763

Int. Cl. B62k *1/00*

U.S. Cl. 280—205 **5 Claims**

1. An omni-directional ball and hat balancing device provided with non-linear stabilizing features comprising:

A. a freely moving rigid fulcruming sphere adapted to roll across a horizontal surface;

B. a rigid and generally circular hat shaped balancing board adapted to balance and ride on said fulcruming sphere, having

1. a protuberant center portion resembling the crown of a hat and occupying about half to two thirds of the diameter of said hat shaped balancing board,

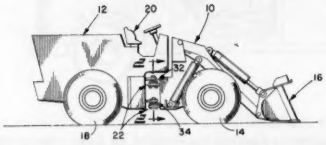
2. an upturned periphery area at the outer circumference of said hat shaped balancing board resembling the brim of a Mexican sombrero hat and forming an annular foot positioning trench between the protuberant center portion and said upturned brim;

C. the undersurface of said protuberant center crown portion of said hat shaped balancing board defining a long arc concave circular cavity, the sides of which gently slope away from the central apex of said concave enclosure to form a motion slowing surface.

3,862,769
PIVOT CONSTRUCTION

William H. Bechman, Williamsville, N.Y., and Harry G. Barrett, Chambersburg, Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 26, 1973, Ser. No. 428,141
Int. Cl. B62d *53/02*
U.S. Cl. 280—400 **5 Claims**



1. A pivotal construction for an articulated vehicle comprising two segments, one of which segments interconnects a pair of substantially parallel, horizontally disposed first and second arms and the other segment interconnects a second pair of substantially parallel, horizontally disposed, oppositely extending third and fourth arms formed on respective front and rear portions of such vehicle, said pair of third and fourth arms being vertically spaced from said pair of fist and second arms comprising:

a member having a part rigidly secured to said first arm and another part extending vertically from said first part defining a bearing surface,

a bearing supported in said second arm having a bearing surface in mating engagement with said bearing surface of said first part,

resilient means imposing a vertical load upon the engaged bearing surfaces,

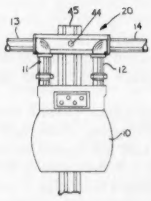
said bearing and second part having a substantially common vertical axis,

a member having a part rigidly secured to said third arm and another part extending vertically from said third arm, and a bearing structure disposed in floating relation between said another part extending from said third arm, and said fourth arm, and permitting vertical movement between said third and fourth arms.

3,862,770
METER BAR PROVIDING ACCOMMODATION TO VARIATIONS IN NIPPLE SPACING

Gordon A. Vangsness, 10209 Pacific Ave., Villa Park, Ill. 60131

Filed July 2, 1973, Ser. No. 375,607
Int. Cl. F16l *35/00*
U.S. Cl. 285—30 **4 Claims**

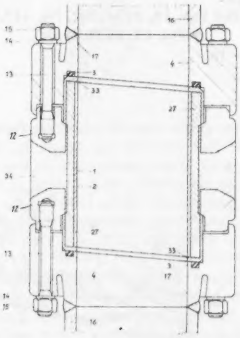


1. A meter bar for mounting a gas meter having a pair of horizontally spaced upwardly projecting nipples comprising, in combination, a metal mounting plate of U-configuration having a vertical mounting portion and forwardly bent, vertically extending end portions, a pair of plumbers' elbows having flanges, alined openings in the end portions for receiving the flanges of respective elbows with the elbows extending mutually inwardly and downwardly and with the downwardly extending ends forming nipple connections, the openings being alined with one another and dimensioned for telescopic reception of the respective flanges, the elbows being tack welded in the openings with the nipple connections precisely spaced to register with the nipples.

3,862,771
ELECTRICALLY INSULATING TUBE COUPLING

Walter Schwarz, Engerthstrasse 237 B, Vienna 2, Austria

Filed Apr. 18, 1973, Ser. No. 352,279
Int. Cl. F16l *11/12, 17/00, 21/00*
U.S. Cl. 285—54 **38 Claims**



1. An electrically insulating pipe coupling having two spaced pipe connections, a hollow electrically insulating coupling member extending between the pipe connections, each of which provides a socket member for receiving the coupling member, an external annular bearing surface on the coupling member and spaced back from the end rim, a stressing arrangement arranged to be guided axially by the socket member and provided with abutment means for bearing on the annular bearing surface of the coupling member to force the coupling member tightly into the socket member, and means maintaining the stressing arrangement rigidly attached to the socket member after the coupling member has been forced into sealing engagement with a sealing surface in the socket, the pipe coupling being so arranged that, when assembled between two metal pipes, no overlap occurs between metal parts of the coupling which are respectively electrically continuous with the two metal pipes.

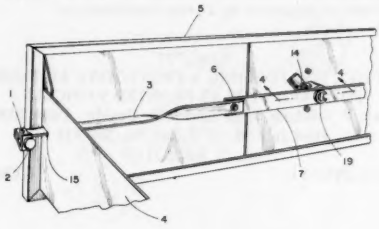
3,862,772
SAFETY STOP LOCK

Ernest W. Latham, North Aurora, Ill., assignor to Bentson Industries, Inc., Aurora, Ill.

Filed Dec. 12, 1973, Ser. No. 423,971
Int. Cl. E05c *1/06*
U.S. Cl. 292—36 **3 Claims**

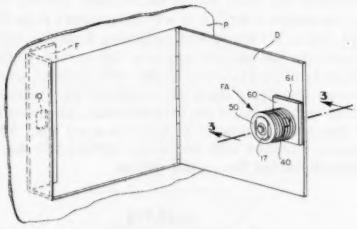
1. A safety stop lock for a closure member, said closure member having a front closure wall and a pair of spaced apart side walls extending inwardly from said front closure wall and normal thereto, border means surrounding an opening to receive said closure member, said border means having an outer surface in facing relationship with said front closure wall, slot means formed through said side walls at a first designated location, an extending arm movably mounted in association with said front closure wall adapted to extend laterally beyond the periphery of at least one of said side walls through

said slot means and movable between a retracted and an engagement position, bumper means at the outer end of said extending arm having inward facing and an outward facing abutment means, said inward facing abutment means being positioned for abutment against said outer surface of said border means when said extending arm is in said engagement position and said front closure wall is spaced outwardly from



said border means, said first designated location of said slot means being spaced apart inwardly from said front closure wall a distance to define a safety space extending between said front closure wall and said border means when said inward facing abutment means of said bumper means abuts said outer surface of said border means, said distance defining said safety space being greater than the corresponding dimension of a selected item said safety space is provided to protect.

3,862,773
PUSH-RELEASE FASTENER
Robert H. Bisbing, Springfield, Pa., assignor to Southco, Inc., Lester, Pa.
Filed Aug. 6, 1973, Ser. No. 386,197
Int. Cl. E05c *19/02*
U.S. Cl. 292—70 **14 Claims**



1. A fastener assembly for releasably securing together two members such as a movable closure member and a fixed frame member in fixed spacial relationship to one another, said assembly comprising:

a. A non-rotatable drive member;

b. Means securing said drive member to one of said closure or frame members;

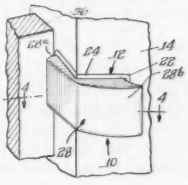
c. A rotatable member on said drive member, said rotatable member having limited axial freedom of movement relative to said drive member;

d. Opposing sets of annular cam surfaces on said non-rotatable drive member and also on said rotatable member;

e. Said opposing sets of annular cam surfaces being spaced axially and, having high points so positioned relative to the high points of the other opposing set that successive opposite axial displacements of said non-rotatable drive member relative to said rotatable member cause successive cumulation rotational displacements of said rotatable member with respect to said drive member;

f. The other of said closure or frame members being adapted to engage with said rotatable member when said rotatable member is in certain angular positions and not to engage when said rotatable member is in certain other angular positions.

3,862,774
RESCUE TYPE DOOR STOP
Larry K. Johnson, Morrison, Ill., assignor to Lawrence Brothers Inc., Sterling, Ill.
Filed Sept. 14, 1972, Ser. No. 289,138
Int. Cl. E05c *3/04*
U.S. Cl. 292—228 **4 Claims**

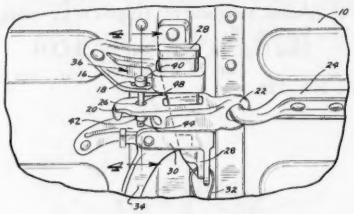


1. In a door assembly including a frame and a door member pivotally hung with respect to said frame for bi-directional movement relative to said frame; a retractable door stop device carried by said frame for co-action with a free edge of the pivotally hung door member to define the closed position of said door while permitting opening movement of said door in a first direction, but precluding movement of said door in a second, opposite direction and thereby defining the closed position thereof; said device including; a housing mounted in a recess formed in a portion of the door frame which recess includes adjacent open sides, one opening to an inner surface of said frame, and the other to an outer surface of said frame, said housing being defined by vertical and horizontal wall sections which define open sides corresponding to the open sides of said recess formed in said door frame; a stop member carried by said housing for pivotal movement, said stop member having a door abutment section and an integral handle section; spring biasing means carried in said housing for yieldably biasing said abutment section to an extended position wherein said abutment section extends outwardly of said inner surface and presents an abutment surface facing generally in said first direction for engagement by said door to locate said door in a closed position, and a cam surface on said abutment section facing generally in a direction oppositely of said abutment surface, and said handle section extending in a direction generally transversely of said abutment section outwardly of said outer frame surface and being positioned out of the path of movement of said door, said handle including a recessed portion defining a handle grip end segment spaced from the outer surface of said frame to enable the grasping of said handle by an attendant and the manual manipulation thereof to produce movement of said stop member against the biasing action of said spring to affect retraction of said abutment section out of the path of movement of said door, and a medial segment on said handle defining an inner side surface in engagement with an outer edge of a vertical wall section of said housing when said abutment section is biased to the extended position, whereby the engagement of said inner side surface with said housing limits further movement of said abutment section and defines its extended position.

3,862,775
NON-REUSABLE LOCKING DEVICE AND METHOD OF USE

Richard L. Gudmundsen, St.Louis Park, Minn., assignor to William A. Braddock, Minneapolis, Minn., a part interest

Filed Nov. 15, 1973, Ser. No. 415,951
Int. Cl. E05c 19/08
U.S. Cl. 292—327 4 Claims



1. A method of using a non-reusable locking device including a bolt having a head, a threaded outer shank of maximum diameter and an intermediate shank section of lesser diameter and including a nut internally threaded of size and configuration to threadably receive said outer shank section and to turn freely on said intermediate shank section, said method including the steps of:

A. installing the shank of the bolt of the device in a position to serve as a locking bolt;

B. threading the nut over the outer shank section and onto the intermediate section;

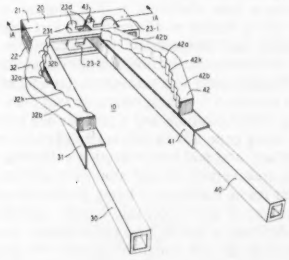
C. deforming the threads of at least one of said nut and said outer shank section so that the nut cannot possibly be rethreaded on the outer shank section, thus to constitute the device as a permanent lock; and

D. destroying the device to release the lock by cutting through the bolt shank.

3,862,776
GRIPPER TOOL

Ernest G. Sims, 120 White Meadow Rd., Rockaway, and Margaret M. Borello, Denville, both of N.J. 07866, assignors to Ernest G. Sims, Rockaway, N.J.

Filed Aug. 29, 1972, Ser. No. 284,676
Int. Cl. B25b 7/02
U.S. Cl. 294—104 5 Claims



1. A tool for gripping objects comprising an elongated head having a first portion spaced from a second portion, each portion having a longitudinal main channel and a plurality of subchannels communicating with said main channel, the channels of the respective portions being aligned with one another, a first arm affixed to said head and extending outwardly therefrom and a second, outwardly extending arm that is movable between the first and second portions of said head,

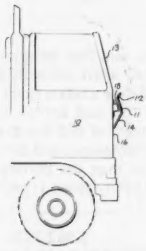
each of said subchannels extending diagonally away from said fixed arm and having a rounded terminal region opposite its region of connection with its main channel, said movable arm including means for engaging the terminal regions of selected oppositely positioned subchannels in the rounded regions thereof,

and the arms have clamping surfaces for gripping objects of a first size and auxiliary clamping members for gripping objects of a second size, different from the first, when said arms are separated by a prescribed distance.

3,862,777
DEVICE FOR FORMING A PROTECTIVE AIRFLOW FORWARD OF FLAT-FRONTED VEHICLES

William P. Schifano, 2505 Agate Rd., Boulder, Colo. 80302

Filed July 19, 1973, Ser. No. 380,935
Int. Cl. B62d 35/00
U.S. Cl. 296—91 6 Claims



1. A wind deflector mounted on a substantially flat-fronted vehicle with a windshield portion being included in the front, the wind deflector comprising: a concave curved planar surface having at least one substantially straight edge positioned adjacent an edge of the windshield, a relatively flat surface of a curvature less than that of the concave surface extending from the concave surface in a direction away from the windshield, and a barrier surface extending from the edge of the substantially flat surface opposite the curved surface to a position in close proximity to the vehicle front, whereby an airstream impinging upon the relatively flat surface will be induced to flow toward the curved surface, the curved surface will direct the airflow in a direction more than 90° to the airstream direction and the barrier surface will diminish air movement behind the curved surface.

3,862,778
ARRANGEMENT FOR INHIBITING ROTATION OF WHEEL RIMS ON SPOKED TRUCK WHEEL

Thornton E. Cory, P.O. Box 9950, Houston, Tex. 77015

Filed Apr. 17, 1974, Ser. No. 461,566
Int. Cl. B60b 11/06
U.S. Cl. 301—10 DC 4 Claims

1. An arrangement for inhibiting rotation of wheel rims with inflatable vehicle tires thereon relative to a spoked hub including;

a. a vehicle hub having a plurality of spokes;

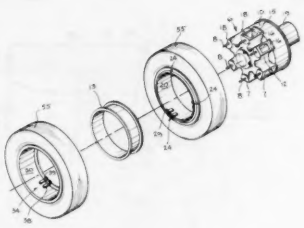
b. threaded bolt means projecting from each spoke;

c. rim means for engaging on said spoked vehicle hub, said rim means having an annular body with an integral annular bead projecting from said body adjacent one edge thereof to form a surface for seating against a vehicle tire and an annular tapered surface projecting adjacent the other edge of said body in a direction generally opposite to said annular bead;

d. lock rim means for engaging with said annular tapered surface to aid in retaining a vehicle tire on said rim means;

e. lug means for engaging on said bolt means and for engaging with said annular tapered surface to retain said rim means on said spoked hub; and

f. a plurality of pairs of spaced members welded to said annular body and abutting said tapered projecting surface, said pairs of members being spaced circumferentially of said annular body and the spaced members of each pair being adjacent a spoke whereby rotation of said rim means relative to said hub engages said one of said members of said pairs with the spokes at circumferentially spaced positions to inhibit rotation of said rim means relative to said hub.



3,862,779

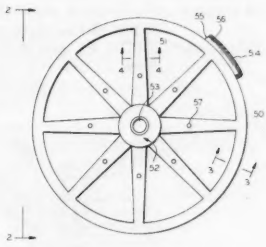
VEHICLE WHEEL

William Weir Jayne, 1609 E. Balboa Blvd., Arlington Heights, Ill. 92662

Filed May 1, 1973, Ser. No. 356,077

Int. Cl. B60b *5/02*

U.S. Cl. 301—63 DD **13 Claims**



10. A vehicle wheel comprising two integral members, each having a wheel center with spokes extending radially therefrom to a circumferential rim seat for a pneumatic tire, said wheel center being shaped for providing a pair of spaced parallel seats for receiving wheel bearings to support cones on an axle, each of said two members being dished, and secured together in a face-to-face relationship, the edges of each of said dished members terminating in flange areas for adding strength and providing greater areas for securing the two members together, the rim formed by said secured together dished members having generally H-shaped cross-section with beads formed at the outer ends of said H-shaped to establish opposed coves for receiving the beads of a pneumatic tire, the inner ends of said H-shaped cross-section embracing, strengthening and reinforcing material, said spokes being hollow with reinforcing material therein.

3,862,780

SLUICE TYPE FEEDING DEVICE

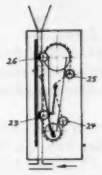
Georg Senn, Mutschellen, Switzerland, assignor to Spribag Aktiengesellschaft, Widen-Mutschellen, Switzerland

Filed July 25, 1974, Ser. No. 491,687

Claims priority, application Switzerland, July 27, 1973, 10966/73

Int. Cl. B65g *53/46*

U.S. Cl. 302—36 **8 Claims**



1. A sluice type feeding device for pneumatic material distributing systems comprising at least one compressible conveying hose, a plurality of successive pinch elements cooperable with said hose to define a material confining chamber therein between an upper and lower of said pinch elements, and drive means for said pinch elements operable to increase the volume of said chamber as said pinch elements move along said hose.

3,862,781

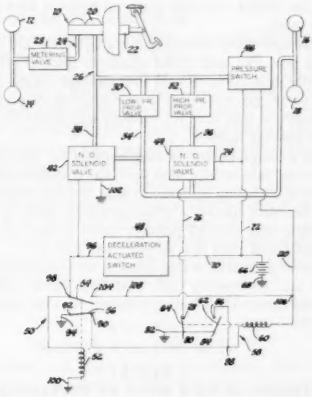
BRAKE CONTROL PROPORTIONING SYSTEM

Robert M. King, Royal Oak, Mich., and William E. Worman, Mesa, Ariz., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 14, 1973, Ser. No. 415,773

Int. Cl. B60t *8/18*

U.S. Cl. 303—22 R **5 Claims**



1. A brake control system for proportioning brake supply pressure to brake apply pressure in accordance with a variable vehicle operational condition, said system comprising:

a source of brake supply pressure;

a brake selectively actuatable by brake apply pressure received from said source;

conduit means operatively interconnecting said source and said brake;

a plurality of brake pressure proportioning valves in said conduit means each having different brake supply pressure points at which they begin to proportion;

and control means responsive to brake supply pressure from said source and a variable vehicle operational condition to establish a curvilinear relationship therebetween and to selectively integrate a selected one or more of said proportioning valves into operational fluid pressure relationship between said source and said brake in accordance with a predetermined desired curvilinear relationship between brake supply pressure and the variable vehicle operating condition as compared to said established curvilinear relationship.

3,862,782

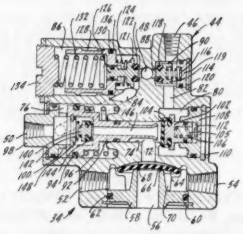
SPRING BRAKE CHAMBER CONTROL VALVE

Charles F. Horowitz, Niles, and Boleslaw Klimek, Des Plaines, both of Ill., assignors to The Berg Manufacturing Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 383,384, July 27, 1973, abandoned. This application Feb. 22, 1974, Ser. No. 444,820

Int. Cl. B60t *15/02*

U.S. Cl. 303—40 **20 Claims**



1. A valve for use in applying brake releasing pressure to spring-actuated brakes in a vehicle air brake system having a service tank and an emergency tank, said valve including a housing having an emergency tank port, a service tank port, at least one brake chamber port, an exhaust port and an air pressure inlet,

first passage means in said housing between said emergency tank port and said brake chamber port, a spring-biased shuttle positioned in said first passage means for closing the same, piston means in said housing responsive to air pressure at said inlet for moving said shuttle to open said first passage means,

second passage means in said housing for connecting said inlet and said service tank port, valve means spring-biased toward a closing position in said second passage means, air pressure above a predetermined level at said inlet causing said second passage valve means to open connecting said inlet and service tank ports,

third passage means in said housing for connecting said inlet and said emergency tank port, and valve means spring-biased toward a closing position in said third passage means.

3,862,783

CENTERING DEVICE WITH AN IMPROVED BALL RETAINER ARRANGEMENT

Charles W. Morris, Mount Clemens, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 8, 1973, Ser. No. 330,556

Int. Cl. F16c *13/00*

U.S. Cl. 308—196 **2 Claims**

1. A centering device comprising:

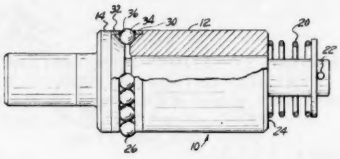
a first member having a tapered annular surface thereon;

a second member having a tapered annular surface thereon axially aligned and juxtaposed to and opposing said tapered surface of said first member to form an annular groove therebetween;

means for allowing adjustment of the relative position of said first and second members to produce movement of said annular taper surfaces toward or away from each other;

a plurality of balls disposed in said groove;

a pair of retainer rings, one carried by each of said first and second member so as to move together therewith, each



retainer ring disposed extending about a respective annular taper surface of the respective first or second member, and having formed thereon a chamber surface concentric to and of reverse slope to that of the respective annular taper surface of the member on which it is carried and extending at least partially thereover, each of said retainer ring chamber surfaces extending axially toward each other to thereby retain said plurality of balls.

3,862,784

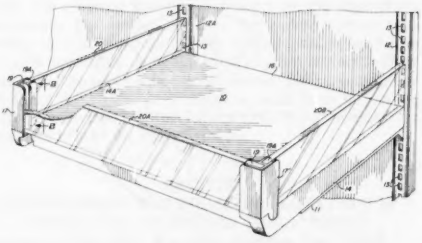
FRONT PANEL AND PARTITION HOLDER FOR DISPLAY SHELF

Wilhelm Heinrich, D-3441 Oberhone, Germany

Filed Nov. 12, 1973, Ser. No. 414,738

Int. Cl. A47f *3/00*; A47b *9/00*

U.S. Cl. 312—140 **10 Claims**



1. A holder for use in interlocking laterally engaging shelf panels comprising:

a rectangular member having two bifurcated portions defining rectangular grooves opening outwardly of said member one perpendicular to the other,

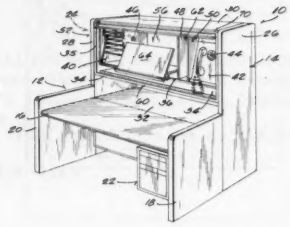
one bifurcated portion at one end of said member extending beyond the common end of said other of said bifurcated portions for frictionally engaging with the outer surface of a supporting shelf arm, and

a stop positioned in said groove of said one of said bifurcated portions for limiting the sliding engagement of said one end thereof over the shelf supporting arm, said grooves extend the full length of said member.

3,862,785
SECRETARIAL WORK STATION

Douglas Scheerhorn, Grand Rapids; Dirk J. Van Kuik, Jenison; Frederick S. Faiks, Comstock Park, and Ronald R. Hodges, Grandville, all of Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

Filed June 18, 1973, Ser. No. 371,167
Int. Cl. A47b *77/08, 81/00*
U.S. Cl. 312—223 **21 Claims**

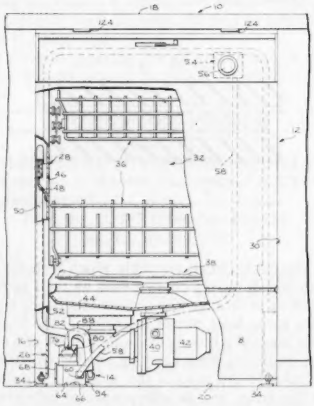


1. In an office work station comprising in combination a work surface and an elevated storage and work reference area, the improvement comprising: a casing defining said elevated storage and work reference area and having an open front; carriage means moveably mounted in said casing; a manuscript tray pivotally mounted on said carriage, said carriage means being moveable between a first position wherein said tray is positioned fully within said casing, a second position wherein said tray is fully removed from said casing through said open front, and a third position intermediate said first and second positions; said pivotal mounting permitting arbitrary positioning of said tray in one of a vertical, horizontal, or various inclined positions.

3,862,786
WASHER INSTALLATION

Bernard J. Brezosky, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 13, 1973, Ser. No. 387,892
Int. Cl. A47b *77/06*
U.S. Cl. 312—228 **6 Claims**

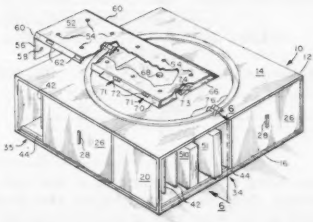


1. A dishwasher installation arrangement comprising
an installation module comprising: a frame secured to the floor beneath a built-in dishwasher and occupying a minor portion of the area thereunder; a fill valve having a water inlet and a water outlet mounted on said frame; and an electrical distributing arrangement also mounted on said frame having an input and an electrical output receptacle; and
an electrically powered washer comprising a frame, means supporting the frame on the floor independently of the module, a fill hose connected to the module outlet and an electrical coupling connected to the receptacle thereby providing for convenient installation of said built-in dishwasher subsequent to supplying utilities to said installation module and wherein exact placement of the installation module on the floor beneath the dishwasher before it is installed is obviated and whereby the dishwasher may be leveled subsequent to installation and secured to a countertop without further adjustment of the installation module.

3,862,787
STORAGE CONTAINER

Lowell C. Hilsinger, 6227 Tajunga, North Hollywood, Calif. 91605

Filed June 13, 1972, Ser. No. 262,329
Int. Cl. A47f *1/04*
U.S. Cl. 312—285 **6 Claims**



1. A storage container comprising:
a substantially hollow housing having means defining a top, bottom, and rear and side walls;
partition means in said housing fixed thereto and dividing the same into a plurality of major receptacles, each major receptacle being divided into a plurality of minor receptacles for receiving an item to be stored therein said minor receptacles encompassing substantially the total volume of said storage container;
stop means affixed to said bottom wall outwardly adjacent said partition means for engagement by and retention of items to be stored in the receptacles; and
spring means extending forward from said rear wall in each minor receptacle for engaging and biasing forwardly from said rear wall such stored items.

3,862,788
DRAWER EJECTOR DEVICE

Bernhard Hock, and Kurt Philipp Gumbrecht, both of Bellheim, Germany, assignors to Sperry Rand Corporation, New York, N.Y.

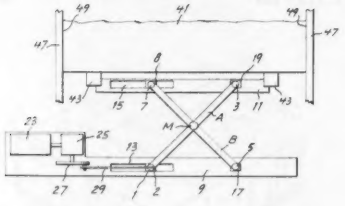
Filed Mar. 22, 1973, Ser. No. 343,899
Claims priority, application Switzerland, Apr. 19, 1972, 5767/72
Int. Cl. A47b *77/08, 8/00*
U.S. Cl. 312—294 **6 Claims**

1. In a mechanized storage cabinet of the type in which a plurality of drawers are transported on carriers selectively positionable at an opening in the cabinet by controlled motion of the carriers along an orbital path on a continuous loop conveyor mechanism, apparatus for ejecting and retracting through the cabinet opening a selected drawer on a carrier positioned at the opening comprising:

support means mounted interiorly of the cabinet and extending lengthwise behind a drawer located at the cabinet opening, said support means including a guide extending partially along the length of the support means normal to the direction of drawer motion and a slide member mounted for motion along said guide,

connection means disposed between the support means and the rear of a drawer at the cabinet opening, so as normally to be spaced from the rear of a retracted drawer to permit unimpeded motion of the orbiting carriers for moving a selected carrier to the cabinet opening, and extending lengthwise of the drawer so as to contact the rear wall of the drawer on at least two points disposed about the drawer center upon being moved into engagement with the drawer, said connection means including a guide extending partially along the length of the connection means normal to the direction of drawer motion and a slide member mounted for motion along said guide,

a lever system located substantially in a horizonital plane coupling the support means to the connection means, said lever system including first and second levers of equal length pivotally connected together at least at one point intermediate the ends of the levers, the first and second



levers being pivotally connected at one end at spaced positions along the support means and pivotally connected at the other end at spaced positions along the connection means such that one end of the first lever is connected to the slide member in the guide of the support means for translation therealong and an end of one of the first and second levers is connected to the slide member in the guide of the connection means, and

drive means fixedly secured relative to the support means interiorly of the cabinet and disposed laterally of the guide in the support means, said drive means including a motor and crank mechanism coupled to said first lever for converting the motor rotational motion to an oscillatory motion of the slide member along the guide of the support means whereby motion of the support means slide member toward the pivotal connection point of the second lever on the support means causes a scissor like action of the levers to move the connection means into contact with the drawer for ejection thereof through the cabinet opening while motion of the support means slide member away from the pivotal connection point of the second lever on the support means causes the connection means to withdraw back into the cabinet.

3,862,789

SUSPENDED PEDESTAL DESK

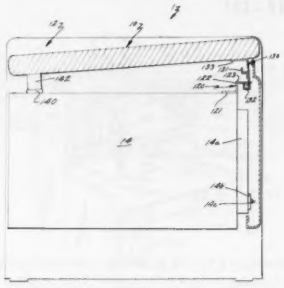
Donald D. Korell, Grand Rapids, and Gale F. Wilcox, Wayland, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed June 1, 1973, Ser. No. 366,155

Int. Cl. A47b *17/00*

U.S. Cl. 312—194 **25 Claims**

1. An article of furniture such as a desk, credenza or the like comprising: a top; a top rail positioned underneath said top, generally at the rear thereof; a component such as a pedestal or the like, said component including a hanger generally at the rear thereof; securing means generally at the front of said top and said component for supporting said component at the front of said article of furniture; means attached to said top for adjusting the angle of orientation of said top so that it slopes downwardly from rear to front; a lower rail depending downwardly from said top generally at the rear thereof; said hanger releasably engaging one of said top rails and said lower rail



whereby when said top is oriented generally horizontally, said component is supported at its rear in said top rail and whereby when said top is tilted, said hanger of said component can be removed from said top rail and engaged in said lower rail, thereby maintaining said component in a generally horizontal orientation while said top is tilted.

3,862,790

ELECTRICAL INTERCONNECTORS AND CONNECTOR ASSEMBLIES

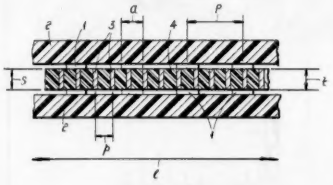
Terrence Ardern Davies, Horton; Geoffrey Michael Garner, Northampton; Rodney John Hurditch, Blisworth; James Thomas Lynch, Towcester; Tony Edward Lanham, Duston, and Kenneth Fearnside, Cheltenham, Gloucester, all of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland

Filed July 10, 1972, Ser. No. 270,384

Claims priority, application Great Britain, July 22, 1971, 34410/71; Aug. 7, 1971, 37223/71; Nov. 20, 1971, 54007/71; Dec. 15, 1971, 58170/71

Int. Cl. H05k *1/04*

U.S. Cl. 339—17 LM **4 Claims**



1. An electrical circuit assembly which includes a stack of insulating boards having contact pads on their surfaces, each pad extending to an edge of a surface of a board and continuing thence for at least part of the depth of the board to form a land, the lands of a board constituting a row of a co-ordinate array; an insulating plate carrying conductive strips running perpendicular to the rows of the array and constituting columns of the array; and an interconnector between the lands and the conductive strips capable of interconnecting individual pads of a first row of pads with corresponding pads in a second row of pads spaced from and parallel to the first row, which interconnector comprises a parallipiped of insulating material having first and second surfaces capable of touching

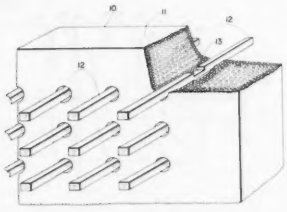
the first and second rows of pads respectively, and, extending through the insulating material from the first to the second surface, a number of spaced parallel cylindrical conductors enclosed within the parallipiped throughout their length and having their transverse end surfaces exposed, the insulating material of the parallipiped retaining the separate conductors in position relatively to each other such that the separation of adjacent conductors in the direction of said rows is less than the dimension of a pad measured in the direction of the rows, and in which the separation of adjacent conductors in a direction perpendicular to said rows is less than the dimension of a pad measured in said perpendicular direction.

3,862,791

TERMINAL PIN BLOCK AND METHOD OF MAKING IT

Hugh Laurence Miller, Oakville, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal, Ontario, Canada

Filed June 13, 1973, Ser. No. 369,564
Int. Cl. H01r 9/00
U.S. Cl. 339—198 R **4 Claims**



1. A method of making a terminal pin block comprising the steps of:

perforating a board of rigid thermoplastic foam with a plurality of holes in a predetermined pattern, said perforating being done with a displacement punch, whereby as the punch progresses through the board, the thermoplastic foam is displaced laterally away from it thereby causing the density of the foam lining the holes to be greater than the density of the foam of the remainder of the board;

inserting a plurality of conductive pins through said holes;

heating the pins to a temperature adequate to cause the thermoplastic foam adjacent the pins to soften and flow about the pins; and

cooling the pins, whereby the softened plastic is allowed to harden thereby causing the pins to be securely held in the board.

3,862,792

ELECTRICAL CONNECTOR ASSEMBLY

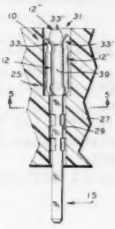
Max L. Jayne, North Warren, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 3, 1973, Ser. No. 403,151
Int. Cl. H01r 13/12
U.S. Cl. 339—93 C **12 Claims**

7. An electrical connector assembly comprising:

an electrically insulative housing having at least one opening therein; and

at least one electrical contact for being positioned substantially within said opening within said insulative housing, said contact having means therein for initially engaging a male contact member and thereafter applying progressively increasing force against said male contact member during initial insertion of said male contact member into said contacting portion, said means comprising at least three engagement members, each of said engagement members being of different lengths, a centrally located retaining portion substantially adjacent said contacting portion having means located thereon for frictionally engaging the internal walls of said established opening



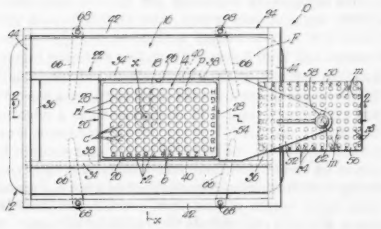
connector body, and a male end portion substantially adjacent said retaining portion for protruding from said connector body.

3,862,793

DEVICE FOR QUICK ALIGNMENT OF ANY AMONG GROUPED SPECIMEN AREAS ON A PLATE WITH OPTICAL MICROSCOPE AXIS

Reginald R. Gallant, Bristol, Conn., assignor to Linbro Chemical Co., Inc., New Haven, Conn.

Filed Apr. 6, 1973, Ser. No. 348,470
Int. Cl. G02b 21/26
U.S. Cl. 350—90 **5 Claims**



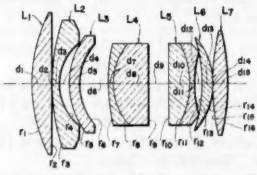
1. A self-contained microscope location finder for use with a rectangular plate having in its top surface a plurality of cup formations arranged in a given pattern of spaced parallel longitudinal and transverse rows, with each cup formation being at the intersection of a longitudinal and a transverse row, said finder comprising a base; a slide with an extension member; means on said base for supporting and guiding said slide for movement in a given field in either of two transverse paths in a first plane; means on said slide for removable placement thereon of a plate in a certain located position in which the top surface thereof is parallel to said first plane, with any cup formation in a located plate on said slide being alignable with a fixed reference axis normal to said first plane by movement of said slide within said field; a member on said base outside, and on one side of, said field; reference marks on one of said members and being in number equal to that of the cup formations in a plate, with said reference marks being in a plane parallel to said first plane and arranged in spaced parallel longitudinal and transverse rows of the same pattern as the cup formations in a plate, and the longitudinal and transverse rows of reference marks being parallel to the longitudinal and transverse rows, respectively, of cup formations in a located plate on said slide; a pointer on the other of said members so coordinated with said reference marks that on alignment of said pointer with any reference mark a corresponding cup formation in a locaed plate on said slide is in alignment with

said reference axis; and means of said base for mounting the latter on the stage of a microscope for adjustability thereon to bring said reference axis into coincidence with the optical microscope axis.

3,862,794
LARGE-APERTURE RATIO RETROFOCUS LENS SYSTEM

Toru Fujii, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo-to, Japan

Filed Jan. 18, 1973, Ser. No. 324,567
Claims priority, application Japan, Jan. 26, 1972, 47-9015; Aug. 17, 1972, 47-81802
Int. Cl. G02b *9/00*
U.S. Cl. 350—214 **7 Claims**



1. A large-aperture ratio retrofocus lens system comprising a front negative lens group consisting of three lenses, i.e., a first lens, second lens and third lens, and a rear positive lens group consisting of four components, i.e., a fourth component, fifth component, sixth lens and seventh lens, where, in said front negative lens group, said first lens is a positive meniscus lens with its convex surface on the object side and said second and third lenses are negative meniscus lenses with their convex surfaces on the object side and where, in said rear positive lens group, said fourth component is a positive cemented component, said fifth component has a negative refractive power, said sixth lens is a positive meniscus lens with its convex surface on the image side and said seventh lens is a positive biconvex lens, and said lens system satisfying the following conditions wherein reference symbol f_{123} represents the total focal length of said first, second and third lenses, reference symbol r_8 represents the radius of curvature of the cemented surface of said fourth component, reference symbol f_5 represents the focal length of said fifth component, reference symbol n_4 represents the refractive index of the front lens element of said fourth component and reference symbol n_5 represents the refractive index of the rear lens of said fourth component:

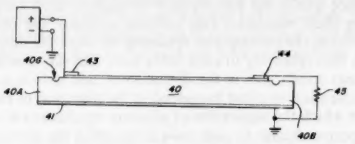
$1.2f < f_{123} < 1.4f$
$1.4f < 1/r_8 < 1.6/f$
$n_5 - n_4 > 0.1$
$3.1f < f_5 < 3.6f.$

3,862,795
SOLID STATE CRYSTAL DISPLAY HAVING TWO ISOLATED END CELL REGIONS

Jacob Tellerman, Bayside, N.Y., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Sept. 3, 1970, Ser. No. 69,289
Int. Cl. G02f *1/26*
U.S. Cl. 350—150 **13 Claims**

5. A single crystal element responsive to electric field actuation to effect control of optical transmission, said element comprising a stick of crystal material exhibiting a bistable optical memory characteristic and further exhibiting domain switching activity at a sharply defined threshold level capable of rotating plane polarized light, said stick having two isolated end cell regions of predetermined, fixed and opposite polarization for limiting domain coupling effects at the non-isolated intermediate regions thereof and electrode means connected

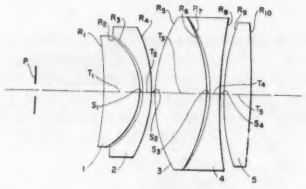


to opposite intermediate face regions of the stick to control selective electrical field excitation thereof.

3,862,796
PLASTIC-GLASS EYELOUPE

Donald De Jager, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1973, Ser. No. 354,047
Int. Cl. G02b *9/60, 3/60, 9/34*
U.S. Cl. 350—216 **4 Claims**

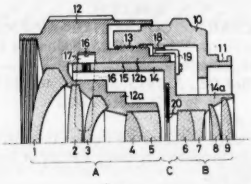


1. A lens consisting of five elements, said elements being, from front to rear, a first positive meniscus element concave to the front, a second negative meniscus element concave to the front, a third positive biconvex element, a fourth negative biconcave element and a fifth positive biconvex element, wherein at least said first, second, fourth and fifth elements are made of plastic.

3,862,797
SHIFTING DEVICE FOR COMPENSATING IMAGE PERFORMANCE OF PHOTOGRAPHIC CAMERA LENS IN CLOSE-UP PHOTOGRAPHING

Kyozo Uesugi, Izumi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed July 23, 1973, Ser. No. 381,660
Claims priority, application Japan, Aug. 7, 1972, 47-92617
Int. Cl. G02b *7/02*
U.S. Cl. 350—255 **5 Claims**



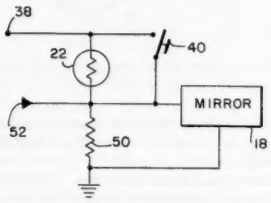
1. A photographic lens for a camera comprising: a photographic optical lens system consisting of a front lens group and a rear lens group and an air space variable by displacement between said front lens group and said rear lens group,

an outer tube including means for securing said photographic lens to a camera body,

a focusing ring rotatably and axially shiftably engaging said outer tube for focusing and shifting means including a

pair of matingly engaging helicoid screws formed in the inner periphery of said outer tube and the confronting face of the focusing ring, said ring fixedly holding the front lens group of said photographic optical lens system, an inner tube engaged with said focusing ring through a compensational shifting means including a cam groove formed in the inner periphery of said focusing ring and a pin projecting from said inner tube and engaging cam groove and means for restricting said inner tube to axial movement relative to said outer tube and said inner tube being adapted to be displaced by said focusing operation, said inner tube fixedly holding the rear lens group of the photographic optical lens system and being fitted slidably and rotatably in said focusing ring through a sleeve fit.

3,862,798
AUTOMATIC REAR VIEW MIRROR ADJUSTER
Charles L. Hopkins, 86 Beechwood, Shelbyville, Ky. 40065
Filed Nov. 19, 1973, Ser. No. 417,276
Int. Cl. G02b *17/00*
U.S. Cl. 350—278 **6 Claims**



1. A rear view mirror assembly comprising a plate providing a reflective surface, a layer of liquid crystal compound in front of said reflective surface, said compound being essentially transparent in its quiescent state and opaque when voltage is applied thereto, a voltage source, light-responsive means controlling said voltage source, and electrical means for connecting said voltage source to said compound, said light-responsive means being effective, when a predetermined light level impinges thereon, to apply a corresponding voltage level to said compound, said light-responsive means including a photocell having a resistance which decreases when light impinges thereon, said electrical means including resistive means connected in series with said photocell to provide a voltage divider network across said voltage source, said network having an output voltage terminal connected to one side of said compound and a ground terminal connected to the other side of said compound.

3,862,799
CONTROLLED-READING DEVICE
Elliott P. Smith, Wilmington, Del., and Robert H. Wachsmuth, Elkins Park, Pa., assignors to McGraw-Hill, Inc., New York, N.Y., by said Elliott P. Smith
Filed Jan. 15, 1973, Ser. No. 323,968
Int. Cl. G03b *21/14, 9/40*
U.S. Cl. 353—88 **7 Claims**

7. In a projector including, on a suitable frame, a lamp, lens means, a film holder for holding a sprocketed film having written material thereon in a plurality of parallel lines, all arranged relative to one another for projecting images of said written material, and a sprocket wheel for advancing said film intermittently, the improvement comprising

a movable opaque slide having an aperture through which only a portion of said line may be projected,

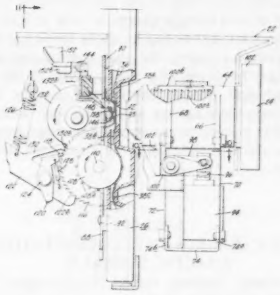
a slide support on said support frame for movably supporting and guiding said slide along a straight-line path which enables the successive portions of said entire line to be viewed in reading sequence,

slide drive means for moving the slide back and forth along said straight line path,

a shutter movably supported by guide means on the slide for movement both with the slide and relative to the slide,

resilient means interconnecting said slide and said shutter and urging the shutter into one of two stable rest positions with respect to the slide, in one of which positions the aperture is closed by the shutter, and in the other of which positions the aperture is open,

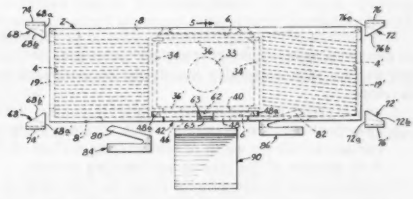
actuator means on said shutter for moving the shutter relative to the slide from one position to the other,



stop means on the frame along the path of movement of the slide so positioned that as the slide approaches each end of its path of movement the stop means will engage the actuator means and drive the shutter into its other stable position such that the aperture is open as the slide moves in the reading direction and is closed as the slide moves in the opposite direction, and

coordinated cam means for driving said slide means and said sprocket wheel to enable viewing of said lines only during the lapses in the intermittent advance of said film.

3,862,800
SLIDE TRANSPARENCY CASSETTE
Maurice K. Carr, Ann Arbor, Mich., assignor to Argus Incorporated, Ann Arbor, Mich.
Filed Aug. 28, 1972, Ser. No. 284,159
Int. Cl. G03b *23/02*
U.S. Cl. 353—113 **17 Claims**



1. In a slide transparency projector, the improvement comprising: a removable cassette body having a pair of horizontally spaced confronting slide holding compartments each of a size to receive a single vertical stack of horizontally oriented slides in face-to-face relation, a pair of open ended horizontally extending slide tracks, each at least of the length of about one slide and respectively interconnecting the confronting upper and lower ends of the slide holding compartments, there being a light transparent area in the lower of said slide tracks at a position thereof constituting a slide projecting station and through which area slide projecting light can pass vertically to project the picture on a slide at said slide projecting station,

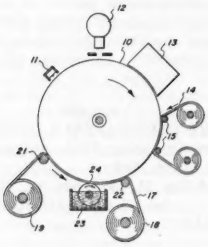
said cassette body having slide pusher-receiving means adjacent the top and bottom of each of said slide holding compartments, separate slide pusher means movable in said slide pusher-receiving means into positions respectively for engaging the outer edge of the adjacent slide at the bottom and top of the slide holding compartments and moving a distance horizontally to push a slide into the adjacent slide holding tracks, whereby slides can be moved from either slide holding compartment into the slide track having said projecting station and slides can be circulated in either direction through said slide tracks and slide holding compartments, slide stack shifter-receiving means at the bottom of each slide holding compartment; and slide stack shifter means movable in said slide stack shifter-receiving means into positions respectively at the bottom of said compartments to raise at least the inner sides of the associated slide stacks above the lower slide track where a new slide entering the slide compartment involved will not engage the edges of a slide already in the compartment involved, and at least one of said cassette body slide holding compartments having a defining wall which is movable into a slide compartment opening position to permit the insertion of a stack of slides into the associated slide holding compartment.

3,862,801

METHOD OF CLEANING AN ELECTROSTATOGRAPHIC IMAGING SURFACE

Richard J. Komp, Bowling Green, Ky., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 886,634, Dec. 19, 1969, Pat. No. 3,725,059. This application Aug. 14, 1972, Ser. No. 280,635
Int. Cl. G03g *13/14, 13/22*
U.S. Cl. 355—15 **8 Claims**



1. A method of cleaning nonaqueous liquid developer from an electrostatographic imaging surface comprising contacting said surface with a cleaning liquid miscible with said liquid developer by

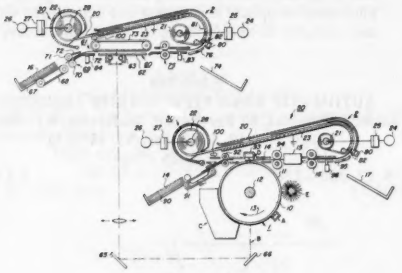
1. placing said imaging surface in wiping contact with an absorbent fibrous material which makes continuous contact across the width of said imaging surface of from 5–50 percent of the area of said imaging surface,
2. applying said cleaning liquid across the full width of said fibrous material at a point intermediate the limit of contact of fibrous material and said imaging surface, and
3. providing counter movement between said imaging surface and said fibrous material, so as to provide a cleaning progression ranging from a first region of fibrous material saturated with a comparatively high concentration of residual liquid developer in said cleaning liquid, an intermediate region of fibrous material saturated with a comparatively lower concentration of residual liquid developer in said cleaning liquid and a last region of dry fibrous material adapted to leave, after cleaning, a substantially continuous transparent film of cleaning liquid diluted-residual developer on said imaging surface.

3,862,802

SHEET REVERSING APPARATUS AND A DUPLEX REPRODUCING APPARATUS EMPLOYING SAME

Henry R. Till, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 22, 1973, Ser. No. 390,650
Int. Cl. G03b *27/32, 27/52*
U.S. Cl. 355—23 **53 Claims**



1. A sheet reversing apparatus for reorienting sheets so that a first side and an opposing side of the sheets may be operated upon comprising:

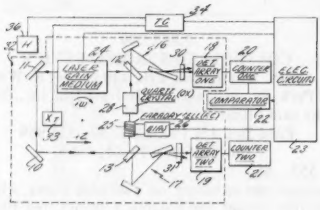
means for storing said sheets comprising a web wherein the sheets are supported between adjacent layers thereof; and means acting on said web to deliver therefrom the sheets stored thereon in a reversed orientation, wherein said delivering means deflects said web through a path to reposition said web so that the sheets may be ejected from the storage means with the opposing side oriented to be operated upon.

3,862,803

DIFFERENTIAL LASER GYRO SYSTEM

George Busey Yntema, Bolton; David C. Grant, Jr., Simsbury, and Richard T. Warner, Winchester, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 27, 1968, Ser. No. 763,277
Int. Cl. H01s *3/05*
U.S. Cl. 356—106 LR **29 Claims**



1. A laser gyro system comprising:

a ring laser comprising a closed loop optical cavity and a lasing medium;

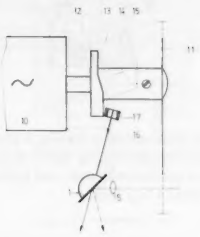
and means including a quartz crystal providing polarization anisotropy and directional anisotropy within the optical path of said ring laser.

3,862,804

DOUBLE BEAM REFLECTANCE PHOTOMETER WITH SWITCHING MIRROR

Konrad Thanisch Hoffmann, Peter-Bied-Strasse 49, 6230 Frankfurt am Main 80, Germany

Filed Apr. 25, 1973, Ser. No. 354,341
Claims priority, application Germany, May 2, 1972, 2221444
Int. Cl. G01j 3/42; G01n 21/48
U.S. Cl. 356—93 7 Claims



1. A double beam photometer for measuring the reflectance of a sample of material relative to the reflectance of a reference material, said photometer comprising:

reference and sample cells for holding the reference and sample materials, respectively;

b. a mirror having a reflective surface and being mounted for motion between first and second positions for directing a beam of radiant energy incident on said reflective surface toward said reference cell when said mirror is in said first position, and toward said sample cell when said mirror is in said second position;

c. a source for directing said radiant energy beam toward said reflective surface;

d. power means for moving said mirror between said first and second positions, the dwell time of said mirror in each of said first and second positions being substantially longer than the time required for said mirror to move between said first and second positions;

e. said radiant energy passing between said mirror and said reference and sample cells along first and second paths, respectively, said first and second paths being defined independently of any further reflecting surfaces; and

f. a mechanical beam chopper interposed between said source and said mirror for interrupting said radiant energy beam synchronously with said movement of said mirror between said first and second positions for passing the radiant energy beam incident onto said reflective surface during a continuous time period during each of said dwell times.

3,862,805

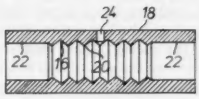
TUBULAR SAMPLE HEATING DEVICE FOR FLAMELESS ATOMIC ABSORPTION SPECTROPHOTOMETRY

Rolf Gunter Tamm, Schlobstr. 5, 7777 Salem, and Wolfgang Wilhelm Witte, Burgbergring 9, 7770 Uberlingen, both of Germany

Filed Jan. 21, 1974, Ser. No. 435,337
Claims priority, application Germany, Jan. 26, 1973, 7302908[U]
Int. Cl. G01n 21/16; G01j 3/30
U.S. Cl. 356—244 18 Claims

1. In a hollow tubular, electrically conducting sample accommodating and heating device for flameless atomic absorption spectrophotometry of the type in which heating current is passed through the tube by electrodes contacting its ends for ultimately atomizing the sample substance held within the tube, the improvement comprising:

that at least part of the inner surface of the tube is provided with grooves (12, 16, 32, 38, 44, 52, 54) which extend



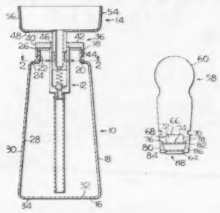
substantially transversely to the longitudinal axis of the tube.

3,862,806

APPARATUS FOR ERASING MAGNETIC INK

William E. Brown, Pewaukee, Wis., assignor to Fritz & Associates, a division of Ozaukee Airways, Ltd., Grafton, Wis.

Filed Dec. 11, 1972, Ser. No. 313,769
Int. Cl. B03c 1/02; B41l 41/00
U.S. Cl. 401—118 5 Claims



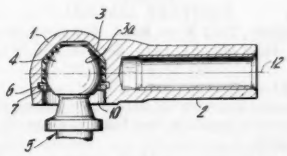
1. In combination, magnetic ink erasing structure including; a reservoir for magnetic ink solvent solution, a trough, a pump interconnecting said reservoir and said trough in solvent transporting relationship therebetween, and scrubbing apparatus adapted to be received within said trough, said scrubbing apparatus including a magnet structure secured in said apparatus, and a pad removably secured to said apparatus adjacent said magnet structure having multiple layers of porous saturable material and a layer of non-porous and non-saturable material separating said porous layers from said magnet structure.

3,862,807

DISENGAGEABLE UNIVERSAL JOINT CONSTRUCTION

Hans-Jurgen Doden, Lemforde/Hann, and Jurgen Ulderup, Haldem, both of Germany, assignors to Lemforder Metallwaren AG, Lemforde/Hann, Germany

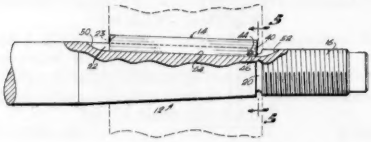
Filed July 13, 1973, Ser. No. 379,196
Claims priority, application Germany, July 21, 1972, 2235874
Int. Cl. F16c 11/06
U.S. Cl. 403—135 4 Claims



1. A disengageable universal joint, comprising a first receiving member having a receiving socket with a spherical engagement surface and an opening to said engagement surface and having an annular holding ring receiving recess located inwardly of the opening, a split spring ring disposed in said

recess, a ball member having an engagement ball having a spherical surface engageable in the spherical engagement surface of said receiving member, the internal diameter of said split spring ring being smaller than said ball member diameter in a relaxed state, said ring being expandable into said recess to permit access of said ball member through the receiving member opening, the recess of said receiving member being widened outwardly from the axis of said ball member proceeding in a direction inwardly from the opening of said receiving member whereby the ring may be displaced axially inwardly of the receiving member joint to cause it to move radially outwardly into the widened diameter portion of the recess and permit access of the ball member but once the ball member is seated on the spherical engagement surface it may relax inwardly to hold the ball member in position and which will be urged downwardly and toward the opening and inwardly upon attempts to remove the ball member so that its internal diameter is reduced and prevents withdrawal of the ball member.

3,862,808
MARINE PROPELLER SHAFT AND KEY
Anthony C. Perini, 3035 S.W. 93 Place, Miami, Fla. 33165
Filed Aug. 5, 1974, Ser. No. 494,704
Int. Cl. F16d *1/08*
U.S. Cl. 403—318 **2 Claims**



1. A tapered marine propeller shaft end and key in combination for receiving a companionately sized marine propeller and hub combination, said shaft and key combination comprising,

a shaft having an end including a threaded axial extension at the terminal end and an end zone tapering toward said threaded extension and an annular groove intermediate the extension and the end zone,

an axially extending keyway in said end zone,

a key sized to nest longitudinally in and to extend out of said keyway,

said keyway extending depthwise in the surface of said end zone a uniform distance of about one-half the radial thickness of the key,

a lateral recess in the tapered end zone perpendicular to the axial keyway defining a shoulder intermediate the annular groove and the tapered end zone,

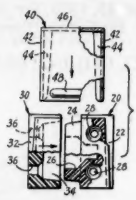
positioning means on the key and extending outwardly of the longitudinal axis of the key on opposite sides thereof and normally in abutting relation with said shoulder to prohibit longitudinal movement of said key in the keyway when a propeller is positioned over the tapered end zone.

3,862,809
FASTENER ASSEMBLY
Norbert Bodner, 7102 River Road, Richmond, Va. 23229
Filed May 31, 1973, Ser. No. 365,701
Int. Cl. F16b *12/50*
U.S. Cl. 403—407 **9 Claims**

1. A fastener assembly for detachably joining together two or more separate members, said fastener assembly comprising in combination:

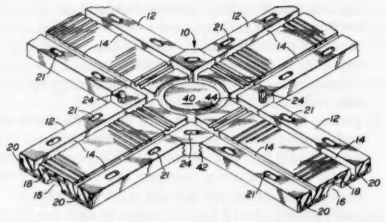
a. A pair of blocks, each block having means for complementally connecting the same and means including a planar surface for mounting the same respectively on said members to be joined,

b. each of said blocks further having a single outwardly opening tapered recessed slot means extending along a respective outer edge thereof, said slot means being disposed in a common plane opposite each other when the blocks are complementally connected forming a guideway, and



c. a rigid locking slide member having a planar surface and oppositely disposed depending tapered flange portions of a size to fit complementally into said guideway releasably locking said blocks together.

3,862,810
MULTIDIRECTIONAL ELASTOMERIC EXPANSION JOINT
John A. Welch, Cuyahoga Falls, Ohio, assignor to The General Tire and Rubber Company, Akron, Ohio
Filed Oct. 11, 1973, Ser. No. 405,335
Int. Cl. E01c *11/02*
U.S. Cl. 404—66 **15 Claims**



1. A load bearing multidirectional expansion joint seal structure comprising:

A. several corner plate members adapted for connection in load bearing relation to the corners of adjacent deck sections at the intersection of the gaps between said deck sections;

B. several spanning plate members vertically disposed in overlapping relation with respect to adjacent said corner plate members and adapted to span the expansion gaps between said deck sections adjacent said intersection;

C. a center plate member vertically disposed in overlapping relation with respect to all of said corner plate members;

D. elastomeric support means disposed between and bonded to the faces of the overlapping portions of all said members;

E. said support means providing vertical support between said overlapping portions and adapted to deform in shear to accommodate respective relative horizontal movement between said corner plate members, spanning plate members and said center plate member;

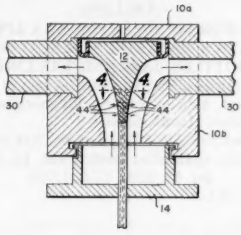
F. elastomeric interconnecting and facing means defining a substantially horizontal upper surface for vehicular traffic and defining spaces to permit relative horizontal movement between all of said members without compressive deformation of said support means; and

G. said support means and said interconnecting and facing means comprising an elastomeric unitary body.

3,862,811
STREAMLINED X-Y-Z CONE VALVE

Henry J. Bernaerts, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 14, 1973, Ser. No. 388,287
Int. Cl. B64c *27/18*
U.S. Cl. 416—20 **5 Claims**

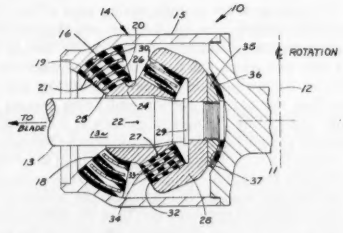


1. A hub for a circulation control rotor comprising:
an outer member having a plurality of hollow fluid-receiving blades mounted thereon and fluid inlet means perpendicular to said hollow blades;
means for directing fluid from said inlet to said plurality of hollow blades; and
fluidic means for biasing fluid flow to a selected one of said plurality of blades.

3,862,812
ROTOR BLADE RETENTION SYSTEM

John H. Gorndt; Warren E. Schmidt, and Robert R. Peterson, all of Erie, Pa., assignors to Lord Corporation, Erie, Pa.

Filed July 18, 1973, Ser. No. 380,304
Int. Cl. B64c *27/38*
U.S. Cl. 416—141 **14 Claims**

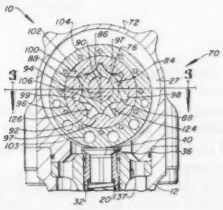


1. A rotor blade retention system comprising
a rotor hub rotatable about a central axis,
at least one sustaining blade, and retention means connecting said blade to said rotor hub with said blade normally extending generally radially from said hub for rotation therewith about said central axis, said retention means including
a pair of arcurate shaped elastomeric bearing means comprising a plurality of radially alternating and bonded layers of rigid and elastomeric material operatively connected in series along a longitudinal axis with said layers oriented to have a component normal to said axis,
said serially arranged bearings mounted between said blade and rotor hub coincident with the longitudinal axis of said blade for restraining said blade against the centrifugal load imposed thereon by compression loading of each of said bearings at least partially normal to said layers while permitting and sharing pivotal movement of said blade about its longitudinal axis by loading said bearings torsionally along the layers,
said radially alternating layers of each bearing being concentrically disposed about the longitudinal axis of said blade and defining therealong an effective elastic center, the elastic centers of said bearings being coincident.

3,862,813
ROTARY ECCENTRIC FLUID MOTOR

Gerald L. Strecker, Arvada, and Dennis L. Schultz, Lakewood, both of Colo., assignors to Gardner-Denver Company, Quincy, Ill.

Division of Ser. No. 270,777, July 11, 1972, Pat. No. 3,791,149. This application Nov. 1, 1973, Ser. No. 411,967
Int. Cl. F01c *1/02*; **F03c** *3/00*; **F04c** *1/02*
U.S. Cl. 418—61 B **5 Claims**



1. A rotary fluid operated motor comprising:
a stationary shaft;
an inner gear member mounted stationary on said shaft and having a plurality of radially projecting external lobes;
an outer gear member disposed for orbital movement with respect to said inner gear member and having inwardly projecting internal lobes cooperable with said external lobes to form expansible chamber means between said gear members;
housing means rotatable with respect to said shaft, said housing means including fluid inlet means for admitting pressure fluid to said chamber means, and said housing means including a housing member having a cylindrical bore having a center axis which is eccentric to the axis of rotation of said housing means, said cylindrical bore forming bearing means surrounding said outer gear member for engagement with said outer gear member whereby said housing means is rotated with respect to said shaft in response to orbital movement of said outer gear member.

3,862,814
LUBRICATION SYSTEM FOR A HYDRAULIC DEVICE

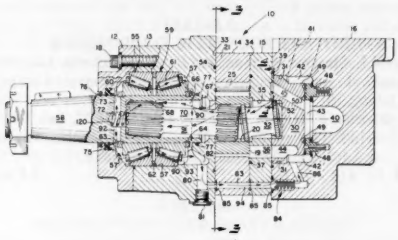
Nils Einar Swedberg, Chanhassen, Minn., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 8, 1973, Ser. No. 386,669
Int. Cl. F04c *27/02*
U.S. Cl. 418—102 **11 Claims**

1. A lubrication system for use in a rotary fluid pressure device of the type having an inlet, an outlet and includng a gerotor set having first and second toothed members defining a plurality of volume chambers by tooth interaction therebetween, valving means for prvlding fluid communication sequentially between the inlet and the outlet, through each volume chamber whereby one of said members partakes of orbital movement with respect to the other and one of said members partakes of rotational movement with respect to the other, a first shaft in driving relationship with said toothed member having rotational movement and a second shaft in driving relation with said first shaft, a housing having an end portion with a cylindrically stepped opening extending there-

through for receiving said first and second shafts, and bearing means including first and second axially spaced bearings within said steped opening for journalling said second shaft, said lubrication system comprising:

first passageway means for providing fluid communication between said first shaft and said member having rotational movement and between said first shaft and said second shaft;



means for providing pressurized fluid to said first passsageway means;

second passageway means defining a passage in series flow relationship with said first passageway means for providing fluid communication in series to said first and second bearings; and

means within said device for providing fluid communication between said second passageway means and said outlet.

3,862,815

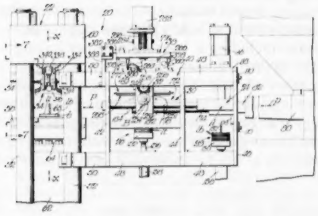
RECORD PRODUCING APPARATUS

Joseph P. Roczynski, Branford, and Chester P. Roczynski, Guilford, both of Conn., assignors to Valley Metallurgical Processing Co., Inc., Greenwich, Conn.

Filed July 20, 1973, Ser. No. 380,962

Int. Cl. B29h *17/00*

U.S. Cl. 425—116 **15 Claims**



1. In record producing apparatus, the combination of a press with upper and lower companion platens, of which said upper platen has a vertical reference axis, and said platens are relatively movable vertically to and from each other to close and open the press, respectively, for molding in the closed press a plastic biscuit into a record with peripheral flash and a center hole centered on said reference axis; a record finishing station remote from said press; record transfer means providing a support with a flat top surface and a projecting center pin thereon, and means guiding said support for movement, with its top surface in substantially horizontal disposition, into one position in the open press beneath said upper platen and with its center pin coaxial with said reference axis, and into another position at said station; means at the press operative to hold a molded record at its peripheral flash and separate the record from said platens on opening the press, and to lower the separated record onto and release it on said top surface with its center hole in record-locating register with said pin in said one position of said support, with said top surface being of an area to support a released record thereon inside its peripheral flash and over a sufficient expanse to avoid substantial sagging of the record; and means at said station operative to trim the flash from a record while supported and located on said top surface in said other position of said support.

3,862,816

APPARATUS FOR MANUFACTURING CAPS OF A FOIL OF PLASTICS MATERIAL FOR SEALING CUPS, BOTTLES, JARS AND THE LIKE

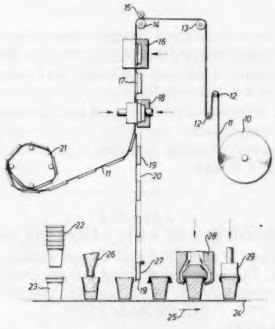
Folke Evert Granseus, Vintrie, and Klas Ingvar Helmer Borgstrom, Malmo, both of Sweden, assignors to Aktiebolaget Platmanufaktur, Malmo, Sweden

Filed Feb. 22, 1973, Ser. No. 334,810

Claims priority, application Sweden, Feb. 24, 1972, 2284/72

Int. Cl. B29c *3/00, 17/08*

U.S. Cl. 425—292 **7 Claims**



1. An apparatus for manufacturing caps of foil of plastics material for sealing cups, bottles, jars and the like comprising moulding means providing a mould cavity having a bottom and a side wall which has two essentially cylindrical side wall portions a narrow portion adjacent the bottom and a portion wider than the narrow portion and being remote from the bottom and joining the narrow portion at a shoulder;

means for fixedly clamping the foil around the mould cavity;

means for stretching the clamped foil in the mould cavity to form thereof a cupular body having a corresponding narrow side wall portion adjacent the bottom of the body and a side wall portion wider than the narrow portion and being remote from the bottom and joining the narrow side wall portion at a shoulder, and means for controlling the orientation of the molecules of the plastics material therein; and

means for cutting off both the bottom portion of the cupular body from said side wall portion and a part of the shoulder.

3,862,817

MOLD FOR LATCH OPENING

Kurt Gunnar Dahlberg, Pittsford, N.Y., assignor to Thermo Trim, Inc., East Rochester, N.Y.

Division of Ser. No. 291,914, Sept. 25, 1972,. This application Apr. 12, 1974, Ser. No. 460,294

Int. Cl. B29c *17/14*

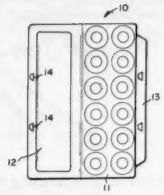
U.S. Cl. 425—292 **13 Claims**

1. A mold for forming a latch opening in a container molded from a softened sheet of plastic, said mold comprising:

a. a former arranged on one part of said mold;

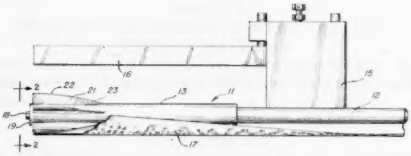
b. a die surface arranged on the other part of said mold;

c. said die surface having a surface oblique to said closure motion of said mold;
d. said former being normally registered with said die surface to contact said die surface during closure of said mold to cut said plastic along one edge of said latch opening; and



e. resilient support means providing relative motion between said die surface and said former transverse to the closure motion of said mold to allow said former to scrape along said oblique surface during further closure of said mold to scrape said plastic away from said cut and into a compressed wall of said plastic having an edge spaced from said cut to form said opening.

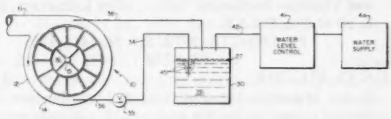
3,862,818
MANDREL FOR SHAPING BAKERY PRODUCTS
Harold T. Atwood, 14152 Irving Ave., Dolton, Ill. 60619
Filed Mar. 18, 1974, Ser. No. 452,428
Int. Cl. A21c *11/00*
U.S. Cl. 425—308 **1 Claim**



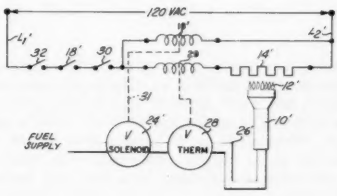
1. An apparatus for shaping bakery products comprising a mandrel having a solid section and a tubular section detachably secured to said solid section, said tubular section having a plurality of longitudinally extending fins projecting outwardly from its circumferential surface to engage torus shaped pieces of dough moved longitudinally of the mandrel whereby said fins cut partially through said torus shaped pieces of dough from the inner circumferential surface of said torus, a conveyor belt substantially embracing said mandrel to impart a rotational axial movement to said pieces of dough as it moves them longitudinally along said mandrel, and said tubular section being so located, relative to said solid section, as to discharge said pieces of dough with the slits positioned on the outer circumferential surface of said pieces of dough.

3,862,819
FUEL CATALYZER
Fred A. Wentworth, Jr., Stratham, N.H., assignor to WSJ Catalyzers, Inc., Exeter, N.H.
Filed Jan. 2, 1974, Ser. No. 430,252
Int. Cl. F23j *7/00*
U.S. Cl. 431—4 **8 Claims**

1. A method of adding water vapor to the fuel mixture in combustion apparatus having a forced air intake comprising:
a. Placing a liquid comprising water in a container;
b. covering said liquid with a nonmiscible layer of oil; and,
c. bypassing a relatively small portion of the forced intake air through the liquid in said container and back to a downstream location in said air intake, whereby water vapor is entrained in metered quantity in said intake air as a combustion catalyst.



3,862,820
DIRECT BURNER IGNITION SYSTEM
Melvin E. Hantack, St. Louis, Mo., assignor to Eaton Corporation, Cleveland, Ohio
Continuation-in-part of Ser. No. 281,067, Aug. 16, 1972. This application Jan. 16, 1974, Ser. No. 433,939
Int. Cl. F23n *5/24*
U.S. Cl. 431—66 **13 Claims**



1. A direct ignition system for a valve controlled fuel burner comprising:
a. an electrically actuated thermal valve connected between said fuel burner and a fuel supply;
b. electromagnetic valve means fluidically in series with said thermal valve, said valve means having an armature and including means for biasing said armature in a normally closed position, said biasing means preventing actuation of said valve means at less than a minimum voltage drop across said valve means;
c. means providing a fuel ignition element proximate to the outlet of said burner, said fuel ignition element reaching fuel ignition temperature in response to a predetermined current flow therethrough; and
d. parallel electric circuit means operating
i. said thermal valve in response to a fuel ignition temperature being present in said fuel ignition element, and
ii. said electromagnetic valve means.

3,862,821

APPARATUS FOR ATOMIZATION AND COMBUSTION OF FLUID INDUSTRIAL WASTES HAVING LOW AND VARIABLE CALORIFIC VALUE

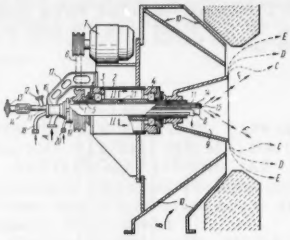
Georgy Alfonsovich Vorms, prospekt Oktyabrya 133, kv. 35; Petr Ivanovich Kuznetsov, ulitsa Rossiiskaya, 56 "v", kv. 51, and Vladislav Borisovich Volkov, ulitsa Koltsevaya, 169, kv. 6, all of Ufa, U.S.S.R.

Filed Nov. 13, 1973, Ser. No. 415,376

Int. Cl. F23d *11/04*

U.S. Cl. 431—168 **3 Claims**

1. An apparatus for atomizing and combustion of fluid industrial wastes having low and variable calorific value, comprising: a housing; a hollow shaft accommodated in said housing; a combustion chamber; a rotary atomizer mounted at the end of said hc" .' shaft facing said combustion chamber; a fixed casing located within said hollow shaft for supplying air to a burner which is arranged within said casing and is intended to form an independently controlled flame along the axis of a spatter cone of the wastes being burned; a pipe arranged within said fixed casing for feeding fluid industrial wastes being burned to the inner surface of said rotary atom-

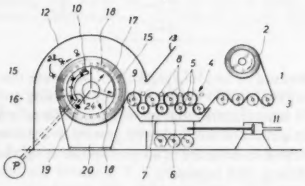


izer; bearings mounted in said housing to carry said hollow shaft; and an annular air duct arranged around said rotary atomizer for supplying air for combustion.

3,862,822
METHOD OF AND APPARATUS FOR WET TREATING TEXTILE FABRICS

Gunter Schiffer, Krefeld, Germany, assignor to Kleinewefers Industrie Companie GmbH, Krefeld, Germany

Filed Sept. 7, 1972, Ser. No. 287,074
Claims priority, application Germany, Sept. 7, 1971, 2144639
Int. Cl. B08b *3/08*
U.S. Cl. 8—137 **2 Claims**



1. A method of wet treating textile fabrics, especially for mercerizing and boiling, which includes the steps of impregnating said fabrics; winding up the impregnated fabrics into a roll in which pressure is exerted upon the fabric; and applying a lye solution having a maximum of 10 to 20 Be (Baume) so that the lye solution passes onto or through the roll of fabric; and the lye solution having a temperature of 5° to 85°C.

3,862,823
PROCESS AND COMPOSITION FOR CLEANING FIBROUS MATERIAL

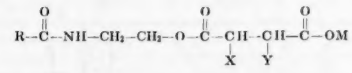
Harold A. Green, Havertown, Pa., and Burton M. Like, East Brunswick, N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Filed Mar. 22, 1973, Ser. No. 343,680
Int. Cl. D06l *1/12*
U.S. Cl. 8—137 **6 Claims**

1. A process for treating fibrous materials which comprises applying a wet composition capable of foaming and drying to a powdery substance to the fibrous material, producing a foam from said composition, permitting the foam to dry to a powdery substance, and then removing the powdery substance plus any entrained dirt and soil from the fibrous material, said composition being an aqueous solution containing a solids content comprising a mixture of (a) an ethoxysulfate salt having the formula:

$$R-(OCH_2H_4)_n-OSO_3M$$

wherein R is an alkyl group of 12 to 16 carbon atoms, M is a salt-forming cation selected from the group consisting of sodium and potassium cations, and *n* is an integer from 1 to 4, and (b) a salt of a sulfosuccinic acid half-ester having the formula:



wherein R is an alkyl group of 11 to 15 carbon atoms, M is a salt-forming cation selected from the group consisting of sodium and potassium cations, and X and Y are either —H or $-SO_3M$, X and Y being different from each other, the ethoxysulfate salt comprising about 20 to 50% by weight of the solids content and the sulfosuccinate salt comprising about 50 to 80% of the solids content.

3,862,824
MEANS FOR INDICATING COMPLETION OF STERILISATION PROCESSES

Arthur William Chapman, 53 Ranmoor Cres., Sheffield, England

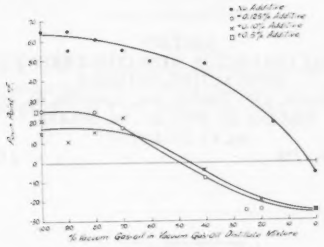
Filed May 30, 1974, Ser. No. 474,609
Int. Cl. G01n *31/22*, *21/08*
U.S. Cl. 23—253 TP **7 Claims**

1. Steam sterilisation indicator means comprising a carrier, a mixture deposited on the carrier and consisting of a carboxylic acid which loses carbon dioxide under steam sterilising conditions together with one of its salts which on exposure to steam produces alkali and causes a continuous change of the pH value in the alkaline direction as exposure to steam continues, and a pH indicator deposited on the carrier and which will undergo changes in colour as the pH changes, to indicate the extent of exposure to steam which has occurred.

3,862,825
LOW POUR POINT GAS FUEL FROM WAXY CRUDES

William M. Sweeney, Texaco Inc. P.O. Box 509, Bacon, N.Y. 12508

Continuation-in-part of Ser. No. 881,358, Dec. 2, 1969, abandoned. This application July 9, 1970, Ser. No. 53,659
Int. Cl. C10l *1/18*
U.S. Cl. 44—62 **4 Claims**



1. A fuel oil composition having improved pour point characteristics consisting of from 55 to 90 percent by weight of a gas oil boiling at about 650° to about 750°F and an additive consisting of from 10 to 45 percent by weight of a middle distillate boiling from about 350° to about 650°F, with an effective pour point depressant amount of an oil soluble ethylenevinyl fatty acid ester copolymer in which the fatty acid component of the ester has a carbon content of from about 2 to about 6, said copolymer having a molecular weight of from about 17,000 to about 29,000, a vinyl fatty acid ester content of from about 24 to about 42% and a melt index of 7 to 465.

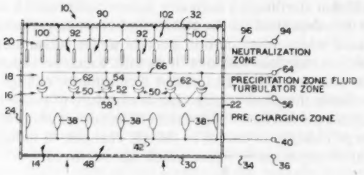
3,862,826
AERODYNAMIC/ELECTRODYNAMIC FILTER SYSTEM

Hans O. Haupt, Indianapolis, Ind., assignor to CRS Industries, Inc., Tampa, Fla.

Filed Nov. 3, 1972, Ser. No. 303,331
Int. Cl. B03c *3/12*
U.S. Cl. 55—112 **20 Claims**

1. A fluid filter system for filtering suspended polluted particles from a fluid stream, said filter system comprising a frame having a plurality of electrically charged zones operatively disposed therein, said plurality of electrically charged zones comprising a precharging zone defined by a plurality of precharging electrodes having a charge thereon of a first polarity; a precipitator zone including precipitator means defined by a plurality of precipitator electrodes, a fluid turbulator zone comprising a plurality of turbulator electrodes

disposed between said precharging electrodes and said precipitator electrodes and adjacent said precipitator electrodes; said precipitator electrodes and said turbulator electrodes both having a charge of a second polarity thereon, said second polarity being opposite to said first polarity, said precipitator electrodes comprising a voltage field strength substantially greater than said voltage field strength of said turbulator



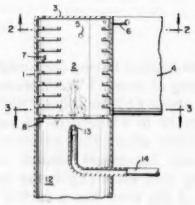
electrodes, whereby said charged particles are accelerated through said precipitator zone to collect on said precipitator means; said fluid turbulator electrodes disposed in predetermined spaced relation to one another and relative to said precipitator electrodes so as to aerodynamically reduce the rate of fluid flow immediately forward of said precipitator means.

3,862,827

WEST DUST COLLECTOR WITH CONCURRENT FLOW CONTACTING CHAMBER

Gerhard Miczek, 1501 Cowling Ave., Louisville, Ky. 40205

Filed Oct. 24, 1972, Ser. No. 300,431
Int. Cl. B01d *47/10*
U.S. Cl. 55—238 **2 Claims**



1. An apparatus for removing dust or other aerosol particles from a gas comprising:

a. an elongated tubular casing defining a cylindrical contacting chamber having a cover enclosing one end of said chamber and a gas liquid droplet outlet disposed at the opposite end of said contacting chamber;

b. a plurality of vertically spaced ring-like flats having their outer edges attached to the walls of the chamber, arranged perpendicular to the axis of the chamber immediately below said enclosing cover;

c. a means for introducing the gas tangentially into said contacting chamber in the area between the ringlike flats, so as to create a flow of gas around the interior of the chamber; and

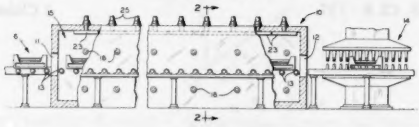
d. a means for supplying liquid to the interior of said chamber and onto the uppermost ring-like flat, wherein said means is disposed at the opposite end of said contacting chamber from the gas liquid and droplet outlet.

3,862,828

CONTROLLING GLASS SHEET BENDING FURNACE TEMPERATURES

George F. Ritter, Jr., and Donald D. Rahrig, both of Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Oct. 19, 1973, Ser. No. 407,896
Int. Cl. C03b *23/02*
U.S. Cl. 65—29 **9 Claims**



1. In a method of bending glass sheets wherein flat sheets of glass are supported and exposed within a heating and bending chamber to temperatures that approximate the softening point of the glass until said sheets sag by gravity to a desired curvature, the step of cooling the ceiling of said heating and bending chamber during said exposure.

3,862,829

METHOD OF PROCESSING FERROELECTRIC DEVITRIFIABLE GLASS CERAMICS

Ronald J. Brandmayr, Ocean, and Sam DiVita, West Long Branch, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 14, 1973, Ser. No. 388,308
Int. Cl. C03c *3/22*
U.S. Cl. 65—32 **5 Claims**

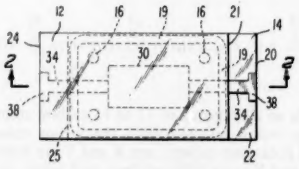
1. Method of improving the electrical properties of ferroelectric devitrifiable glass ceramics selected from the group consisting of barium strontium niobate devitrifiable glass ceramic, barium strontium titanate devitrifiable glass ceramic, and lead zirconate - lead titanate devitrifiable glass ceramic comprising subjecting the ferroelectric devitrifiable glass ceramics to inert gas pressures of about 5,000 pounds per square inch to about 50,000 pounds per square inch at temperatures from about 700°C. to about 1,100°C. for about fifteen minutes to about 2 hours; the devitrified body so obtained being characterized by a uniform microstructure having a grain size less than 0.1 micron.

3,862,830

METHOD OF FORMING VITREOUS ENCLOSURES FOR LIQUID CRYSTAL CELLS

Herman Abraham Stern, Somerville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed July 18, 1973, Ser. No. 380,387
Int. Cl. C03b *23/24*
U.S. Cl. 65—58 **5 Claims**



1. A method of fabricating a liquid crystal cell comprising: bonding a spacer having a softening point at a first tempera-

ture to one of two enclosure members of the cell to be fabricated,

bonding a bead of a vitreous material having a softening point at a temperature less than that of said first temperature to one of said two members,

thereafter disposing said two members in enclosure forming relationship with said spacer and said bead disposed therebetween,

heating said disposed parts to soften said bead at a temperature less than said first temperature,

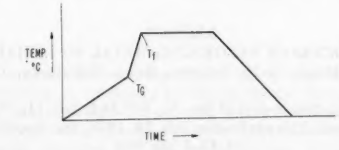
while said bead is soft, pressing said members together to compress said bead therebetween until further compression is prevented by contact of said spacer with the other of said two members, and

cooling said bead to provide a sealed joint between said two members.

3,862,831
GLASS FABRICATION PROCESS

Melvin Berkenblit, Yorktown Heights; Robert O. Lussow, Hopewell Junction, and Arnold Reisman, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 20, 1973, Ser. No. 353,026
Int. Cl. C03c *17/04*
U.S. Cl. 65—60 **22 Claims**



1. A process of synthesizing a new glass from a low and higher glass transition temperature glass during the forming of a glass part therefrom such that said new glass exhibits a glass transition temperature higher than the glass transition temperature of said low glass transition temperature glass, comprising:

combining with said low glass transition temperature glass a pre-selected amount of said higher glass transition temperature glass so as to form a physical combination thereof on a support medium for forming said glass part; heating said physical combination gradually to approximately the glass transition temperature of said low glass transition temperature glass and thereafter rapidly heating said combination to a temperature where said low glass transition temperature glass flows with said latter temperature being below that required to flow out a preequilibrated frit of a glass of the same composition as said physical combination which has first been synthesized; and

maintaining said flow temperature until the higher glass transition temperature glass dissolves in said low glass transition temperature glass to thereby form said part whereby said part is formed at a temperature less than that which would have been required has a single glass of identical composition as the glass synthesized in situ been applied to said support medium and flowed out.

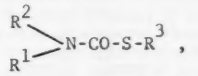
3,862,832
HERBICIDAL MIXTURES OF THIOALKYL CARBAMATES AND 1-PHENYL-4-AMINO-5-HALOPYRIDAZONE-(6) OR SALTS THEREOF

Adolf Fischer, 43 Speyerer Strasse, 6704 Mutterstadt, Germany

Continuation-in-part of Ser. No. 82,514, Oct. 20, 1970, abandoned. This application Oct. 9, 1973, Ser. No. 404,284
Claims priority, application Germany, Oct. 23, 1969, 1953261
Int. Cl. A01n *9/22*
U.S. Cl. 71—92 **12 Claims**

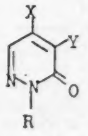
1. A selective herbicide composition containing a herbicidally effective amount of a mixture consisting essentially of

a. a compound of the formula



where R^1 denotes lower alkyl or propargyl, R^2 denotes cyclohexyl or bicyclooctyl, and R^3 denotes alkyl of 1–4 carbon atoms and

b. a compound of the formula



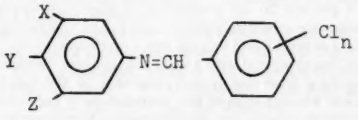
where R denotes phenyl which may be substituted by methyl, X denotes amino and Y denotes chlorine, bromine or iodine, the weight ratio of a to b being in the range of 5:1 to 1:3.

3,862,833
HALOANILINE DERIVATIVES AS PLANT GROWTH MODIFIERS

Wayne O. Johnson, Warminster; Harlow L. Warner, Hatboro, and Roy Y. Yih, Doylestown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Sept. 18, 1972, Ser. No. 290,190
Int. Cl. A01n *9/20*
U.S. Cl. 71—121 **10 Claims**

1. A method of stimulating lateral bud growth and increasing the number of pods of a legume plant at a susceptible stage of growth comprising contacting the plant with an amount, effective for these purposes, of a composition containing an inert, non-phytotoxic carrier and, as the active ingredient, a compound of the formula



wherein

X is chlorine,

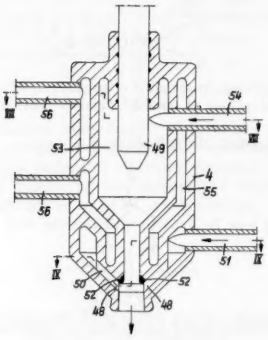
Y and Z are selected independently from hydrogen and chlorine with the proviso that one and only one of Y and Z is hydrogen, and

n is 0, 1 or 2.

3,862,834
METHOD FOR PRODUCING STEEL

Herbert Ritter Von Waclawiczek, Duisburg, and Klaus Ermisch, Essen, both of Germany, assignors to Fried Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Continuation-in-part of Ser. No. 240,641, April 3, 1972, abandoned. This application Aug. 1, 1972, Ser. No. 277,034
Claims priority, application Germany, Apr. 3, 1971, 2116445
Int. Cl. C22d *7/00*
U.S. Cl. 75—11 **9 Claims**



1. A method for reducing iron ore dust, comprising
a. forming said dust into a cloud;
b. transporting said cloud in reducing gas to a plasma stream of a plasma burner;
c. reacting said cloud with said reducing gas during transporting to enrich said dust and reduce said ore;
d. introducing the transported cloud containing reduced ore into the plasma stream of a plasma burner to melt the reduced ore and form liquid particles; and
e. directing the plasma stream to penetrate into a liquid metal bath of a melting furnace to pass said liquid particles into and mix the liquid metal bath.

3,862,835
PROCESS FOR PRODUCING ALUMINIUM

Herbert M. Scull, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 215,804, Jan. 6, 1972, Pat. No. 3,784,372, which is a continuation-in-part of Ser. No. 50,878, June 29, 1970, abandoned. This application Aug. 30, 1973, Ser. No. 393,009
Int. Cl. C22b *21/00*
U.S. Cl. 75—68 C **15 Claims**

1. A process for the production of aluminum by thermally decomposing an alkylaluminum compound comprising: introducing a neutral liquid solvent into a container, contacting the neutral liquid solvent with a solid heat transfer member, transferring heat from the transfer member to the solvent in a sufficient amount to raise the temperature of the solvent to a temperature above the decomposition temperature of the alkylaluminum compound to be decomposed, terminating the transfer of heat and permitting the heat transfer member to cool, and adding the alkylaluminum compound to the solvent in the container to effect its decomposition with reduced adherence of the resulting aluminum to walls of the container and to the heat transfer member.

3,862,836
REMOVAL OF LEAD FROM COLUMBIUM MINERAL CONCENTRATE

Dan M. Kentro, New York, N.Y., and James W. Cole, Boulder City, Nev., assignors to Molybdenum Corporation of America, Louviers, Colo.

Filed May 18, 1972, Ser. No. 254,406
Int. Cl. C22b *1/00*
U.S. Cl. 75—84 **14 Claims**

1. A process for removing lead from columbium mineral concentrates which comprises:
a. adding to the columbium mineral concentrates an inorganic chloride selected from the group consisting of alkaline earth metal chlorides, alkali metal chlorides, iron chlorides, rare earth metal chlorides, and amonium chloride, and
b. heating the mixture of (a) at a temperature of at least 650°C for a period sufficient to remove substantially all of the lead from the columbium bearing mineral concentrates.

11. A process for removing lead from columbium mineral concentrates which comprises:
a. mixing with the columbium mineral concentrates in a finely divided state a finely divided solid inorganic chloride selected from the group consisting of alkaline earth metal chlorides, alkali metal chlorides, iron chlorides, rare earth metal chlorides, and amonium chloride, and mixtures thereof, in an amount up to about 50 percent by weight of the mixture, and
b. heating the mixture at a temperature above about 650°C for a period of at least 15 minutes.

3,862,837
PROCESS OF REFORMING METAL MATERIAL

Kokichi Otani, 14-26, 3-chome, Hiroo, Shibuya-ku, Tokyo, Japan

Continuation-in-part of Ser. No. 697,568, Jan. 11, 1968, abandoned. This application July 29, 1970, Ser. No. 59,375
Int. Cl. C22b *9/00*
U.S. Cl. 75—96 **18 Claims**

1. A metal treating process wherein molten ferrous metal is being processed, and comprising the step of adding to the molten metal from about 0.9 to about 10 Kg. of a hydrocarbon material which will form a reducing gas and a correlated amount of carbon containing material for each 1,000 Kg of molten metal present and wherein approximately one part by weight of hydrocarbon material selected from the group consisting of animal, vegetable and petroleum oils, kerosene, benzene, wax and greases is used with approximately three to five parts by weight of a carbon-containing material selected from the group consisting of charcoal, coke, electrode chips, graphite, chaff, pasteboards and float-boards.

3,862,838
BRAZING ALLOYS

Meczyslaw Herman Sloboda, and John Sidney Hatswell, both of London, England, assignors to Johnson Matthey & Co., Limited, London, England

Filed June 5, 1973, Ser. No. 367,226
Claims priority, application Great Britain, June 7, 1972, 26551/72
Int. Cl. C22c *5/00*
U.S. Cl. 75—134 C **5 Claims**

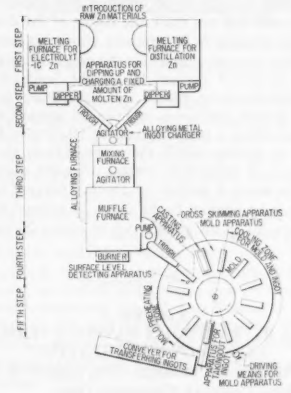
1. A silver based alloy consisting essentially of, apart from impurities, 40–45 percent by weight silver, 25–30 percent by weight copper, 28–33 percent by weight zinc and 0–5 percent by weight tin.

3,862,839

PROCESS FOR CONTINUOUS PRODUCTION OF A LARGE SIZED ZINC-BASE ALLOY INGOT

Katsumi Shimizu, Takebara; Tokiziro Kuroda, and Kenzi Komiya, both of Ohmuta, all of Japan, assignors to Mitsui Mining and Smelting Co., Ltd., Chuo-ku, Tokyo, Japan

Filed Mar. 26, 1973, Ser. No. 344,911
Claims priority, application Japan, Apr. 1, 1972, 47-32860
Int. Cl. C22c 1/02
U.S. Cl. 75—135 10 Claims



1. A process for continuous production of large sized zinc-base alloy ingots, employing an alloying furnace comprising a mixing furnace, at least one charging well communicating with said mixing furnace through a wall thereof, at least one agitating means extending into said mixing furnace, a muffle furnace connected with said mixing furnace, at least one discharging well communicating with said muffle furnace through a wall thereof and a partition wall having an overflow channel and interposed between said mixing and muffle furnaces; comprising the steps of:

introducing a selected amount of molten zinc and at least one alloying metal ingot into said charging well while agitating said molten zinc, and simultaneously melting said ingot and mixing the thus-formed molten alloying metal with said molten zinc to form in said mixing furnace a molten zinc-base alloy;

repeating the introduction of said molten zinc and said alloying metal ingot into said charging well at fixed time intervals and effecting melting of the thus-added ingots and mixing of the resulting molten alloying metal with the molten zinc whereby a molten zinc-base alloy is continuously formed in said mixing furnace, and intermittently overflowing said molten zinc-base alloy from said mixing furnace past said partition wall into said muffle furnace; intermittently and successively casting a selected amount of the molten zinc-base alloy from said muffle furnace to form a large sized ingot thereof by feeding said molten zinc-base alloy from said discharging well and introducing said molten zinc-base alloy into at least one ingot mold; and

regulating the amount of molten zinc and alloying metal ingot introduced into said charging well per unit time so that the amount thereof introduced into said mixing furnace and the amount of the molten-zinc-base alloy discharged from said muffle furnace are maintained in a state of approximate equality.

3,862,840

PROCESS FOR MANUFACTURE OF HARD AND NON-DEFORMABLE ALLOYS WITHOUT COMPACTING BY SINTERING IN THE SOLID-LIQUID PHASE

Harbhajan S. Nayar, Plainfield, N.J., assignor to Airco, Inc., New York, N.Y.

Filed Dec. 20, 1972, Ser. No. 316,970
Int. Cl. B22f 1/00
U.S. Cl. 75—200 11 Claims

1. a. providing a mold cavity suitable for forming therein said articles, said cavity having dimensions slightly exceeding the principal dimensions *a*, *b*, *c* of said article to be molded, at least one of said dimensions *a*, *b*, or *c* being ½ inch or less, and at least one other of said dimensions being much greater than said ½ inch dimension;

b. pouring into said cavity powders containing elements selected from the group consisting of iron, chromium, molybdenum nickel, cobalt, boron, carbon and silicon and having a composition selected from the group consisting of (a) prealloyed powders of hard andc no n-deformable alloys characterized by (1) a homogeneous alloy structure, (2) a fixed solidus or eutectic above 1,800°F and (3) a rockwell C scale hardness greater than about 30, and (b) blended powders which yield said characterized hard and non-deformable alloys upon subjection to step (c) herein; and

c. without application of external compaction forces subjecting said mold andc contents to a temperature at or above the solidus temperature and below the liquidus temperature of the composition to effect liquid phase sintering of the contained plwders; andc

d. allowing said sintered powders to cool so that a solidified and densified product is obtained.

3,862,841

POLYMERIZATION IMAGING BY CHARGE INJECTION FROM A PHOTOCONDUCTIVE LAYER

Louis A. Pilato, Bound Brook, N.J.; Paul J. Cressman, Fairport, and William W. Limburg, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 588,203, Oct. 20, 1966, abandoned. This application Sept. 15, 1969, Ser. No. 858,060
Int. Cl. G03g 13/22
U.S. Cl. 96—1 R 10 Claims

1. An imaging process comprising the steps of:

a. providing a photoconductive layer;

b. placing on a surface of said photoconductive layer a polymerizable composition consisting essentially of unsaturated vinyl containing compounds capable of undergoing liquid to solid addition polymerization in response to charge injection from said photoconductive layer;

c. exposing said photoconductive layer to a pattern of electromagnetic radiation to which said photoconductive layer is sensitive; and

d. applying an electrical field across said photoconductive layer and said polymerizable composition until an image is formed.

3,862,842

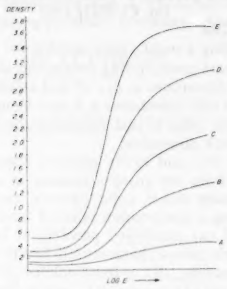
IMAGE-FORMING PROCESSES AND COMPOSITIONS

Vernon Leon Bissonette, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 189,289, Oct. 14, 1971, abandoned, and a continuation-in-part of Ser. No. 256,072, May 23, 1972, abandoned, which is a continuation-in-part of Ser. No. 150,741, June 7, 1971, abandoned. This application Nov. 28, 1973, Ser. No. 420,194
Int. Cl. G03c 5/24, 5/54, 7/32
U.S. Cl. 96—22 63 Claims

1. In an image-forming process wherein an oxidation-reduction reaction is utilized to form an image record, the improvement which comprises employing in the reaction medium an inert transition metal complex oxidizing agent and

a reducing agent which undergo redox reaction in the presence of catalytic metal material or catalytic carbon material and providing in said reaction medium an imagewise distribution of (1) said oxidizing agent, (2) said reducing agent or (3) said catalytic carbon material or catalytic metal material, said



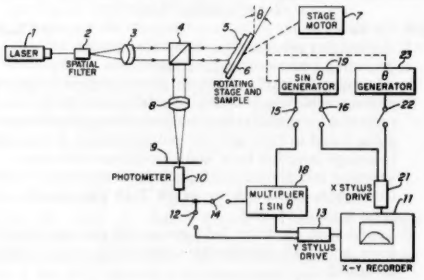
oxidizing agent and said reducing agent being so chosen that they are essentially inert to oxidation-reduction reaction in the absence of said catalytic material and the redox reaction products thereof are essentially noncatalytic for said oxidation-reduction reaction.

3,862,843

PHOTOGRAPHIC ELEMENT CONTAINING A LAYER OF PHYSICAL DEVELOPMENT NUCLEI LESS THAN TWO MICRONS IN THICKNESS AND A DEVELOPMENT ACTIVATOR

Harry Lerner, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed June 1, 1972, Ser. No. 258,769
Int. Cl. G03c *1/48, 5/24, 1/06*
U.S. Cl. 96—76 R **23 Claims**



1. A photographic element comprising (1) a support having thereon (2) a layer of physical development nuclei or of photosensitive material capable of generating such nuclei adjacent to said support, said layer including a solvent permeable binder and having a thickness of less than about 2 microns, and (3) a physical developer activator material comprising a complexing agent in a solvent permeable binder which activator material is present in sufficient amount to cause accelerated physical development in said layer upon contact with an aqueous physical developer comprising a solution of silver ions, ferrous ions, ferric ions, and an ionic surfactant as a developer stabilizer and which activator material preferentially forms complexes with the ferric ions of said physical developer and wherein the activator material is different than the solvent permeable binder.

3,862,844

SnO_2 CONTAINING LEAD SILICATE GLASS HAVING A LOW MELTING POINT

William F. Wenning, Jr., Beaver Falls, Pa., and Louis A. Blanco, Tuckahoe, N.Y., assignors to Ceramic Color & Chemical Manufacturing Co., New Brighton, Pa.

Filed Nov. 3, 1972, Ser. No. 303,620
Int. Cl. C03c *3/10, 3/30, 5/00*
U.S. Cl. 106—49 **12 Claims**

1. A low melting point glass or frit especially adapted for use as a protective layer for overglaze decalcomanias and ceramic decorations, which protective layer is substantially resistant to attack by acid and/or alkali and to mechanical abrasion and inhibits release of lead, cadmium and other toxic substances normally found in such decalcomanias and applied ceramic decorations, and will not mask the colors of the design layer of such decalcomanias or decorations, consisting essentially of silicon dioxide in an amount within the range of from about 15 percent to about 65 percent by weight, lead oxide in an amount within the range of from about 10 percent to about 50 percent by weight, cadmium oxide in an amount within the range of from about 1 percent to about 10 percent by weight, tin oxide in an amount within the range of from about 2 percent to about 15 percent by weight, titanium dioxide in an amount from about 1 percent to about 6 percent by weight, boric oxide in an amount up to about 20 percent by weight, and alkali oxides in an amount up to about 20 percent by weight.

3,862,845

ALUMINA REFRACTORIES HAVING A PERMANENT EXPANSION UPON HEATING

Edward L. Manigault, Cincinnati, Ohio, assignor to The Chas. Taylor's Sons Company, Cincinnati, Ohio

Filed Feb. 25, 1974, Ser. No. 445,647
Int. Cl. C04b *35/10, 35/12*
U.S. Cl. 106—59 **4 Claims**

1. A refractory composition of matter having a permanent expansion upon heating comprising from 72 percent to 98 percent alumina, from 1 percent ot 25 percent chromic oxide, from 0.1 percent to 0.5 percent MgO and from 0.5 percent to 4.0 percent P_2O_5.

3,862,846

PROCESS FOR PREPARING CERAMIC COMPOSITIONS

Richard H. Smoak, Bethlehem, Pa.; Ronald Staut, Cherry Hill, N.J., and John F. Burst, Wayne, Pa., assignors to General Refractories Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 844,628, July 24, 1969, abandoned. This application Jan. 14, 1972, Ser. No. 218,007
Int. Cl. C04b *35/60*
U.S. Cl. 106—73.1 **26 Claims**

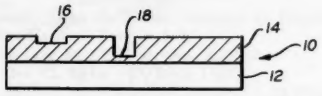
1. A process for shaping and densifying an alumina ceramic product having a continuous ceramic matrix and a density greater than 3.42 comprising:

a. mixing, by weight, (i) about 60 to 99.99 percent of a decomposable ceramic-forming compound which on heating to a temperature of about 300°C – 1,200°C decomposes to alumina; (ii) about 0.01 to 15 percent of at least one dopant selected from the group consisting of fluorine-containing inorganic compounds and metal oxides and (iii) about 0 – 39.99 percent of a non-metallic filler material which is non-decomposable at 300°C – 1,200°C;

b. heating the mixture to about 300°C – 1,200°C to decompose said ceramic-forming compound; and

c. pressing said mixture while said ceramic-forming compound is decomposing to shape, strengthen and densify said mixture and produce a product that when cooled has a continuous ceramic matrix, and a density greater than 3.42.

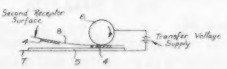
3,862,847
METHOD FOR DRAWING
Judah Newberger, 149 S. Broadway, White Plains, N.Y. 10605
Continuation-in-part of Ser. No. 149,899, June 4, 1971, Pat. No. 3,730,751. This application Mar. 19, 1973, Ser. No. 342,505
Int. Cl. B44c 1/22; B44d 1/54
U.S. Cl. 117—8 7 Claims



1. A method of drawing an original image comprising the steps of:

providing a sheet having a surface area upon which said original image is to be drawn, said surface area having a dissolvable coating covering substantially all of said surface area, said surface area having a given shade, said coating having a starting shade which contrasts with the shade of said surface area; and selectively dissolving said coating with a corresponding solvent therefor to produce said original image, said original image being drawn substantially by said selective dissolving, at least a portion of said original image being produced by partially dissolving at least a portion of said coating in a given area by progressively increasing the solvency thereof in said solvent to produce true half-tones of said starting shade in said given area, whereby an original image capable of having a full range of true half-tones of said starting shade can be produced.

3,862,848
TRANSFER OF COLOR IMAGES
Brian George Marley, Belair, assignor to Research Laboratories of Australia Pty. Limited, Eastwood, Australia
Filed Dec. 20, 1972, Ser. No. 316,756
Claims priority, application Australia, Dec. 24, 1971, 7516/71
Int. Cl. G03g 13/16, 15/16
U.S. Cl. 117—37 LE 6 Claims



1. An electrostatic method for the reproduction of color printed matter comprising the following steps:

a. producing an electrostatic latent image on the dielectric surface of an electrostatically chargeable recording member;

b. contacting said electrostatic latent image with electroscopic marking particles of a color suspended in an insulating carrier liquid to develop said latent image;

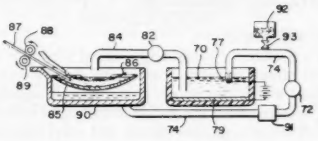
c. transferring said developed image to an electrically conducting first receptor surface by the simultaneous application of contact and a directional electrostatic field of a polarity to urge the marking particles to said first receptor surface;

d. transferring said developed image from said first receptor surface to a second receptor surface by the simultaneous application of contact and a directional electrostatic field of a polarity to urge developed image to said second receptor surface;

e. fixing said developed image to said second receptor surface; and,

repeating steps (a) to (e) at least once using electroscopic marking particles of a different color to produce a print on said second receptor surface containing at least two colors.

3,862,849
METHOD FOR PREPARATION OF DEVELOPING SOLUTION FOR DEVELOPING ELECTROSTATIC LATENT IMAGES
Shozo Kasuya, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Continuation of Ser. No. 136,214, April 21, 1971, abandoned, which is a division of Ser. No. 780,672, Dec. 3, 1968, Pat. No. 3,603,289. This application Apr. 4, 1973, Ser. No. 347,888
Claims priority, application Japan, Dec. 5, 1967, 42-78108
Int. Cl. G03g 13/10
U.S. Cl. 117—37 LE 6 Claims



1. Method of supplying a developing solution to a developing chamber in which a sensitized paper having a latent image thereon is electrostatically developed comprising

flowing a developing solution comprised of a liquid having a specific resistance greater than 10^{12} ohm cm and a dielectric constant less than three, and electrically chargeable image producing particles, from a liquid supply container spaced from the developing chamber to said developing chamber thereby developing said latent image;

returning the developing solution from the developing chamber to the supply container by transporting the liquid through a conduit, part of the return flow spaced to pass above the supply container;

locating a particle container above the spaced part of the flow;

flowing a quantity of particles into the spaced part of the flow to provide increased concentration of the developing solution;

electrically charging the particles in the spaced part of the flow; and

discharging developing solution including the charged particles from the spaced part of the flow into the supply container.

3,862,850
ELECTROLESS GOLD PLATING ON REFRACTORY METALS
Richard Kent Trueblood, Leucadia, Calif., assignor to Ceramic Systems, San Diego, Calif.
Filed June 8, 1973, Ser. No. 368,431
Int. Cl. C23c 3/02
U.S. Cl. 117—50 6 Claims

1. A method for plating refractory metals comprising the steps of:

activating the metal to be plated by immersing it in an alkaline descaler at a temperature in the range of 80°–100°C, rinsing the metal in deionized water, rinsing the metal in a dilute acid at a temperature in the range of 80°–100°C, and rinsing the metal in boiling deionized water; and

immersing the metal in an electroless gold plating bath consisting essentially of water, about 2 to 10 grams per liter of a soluble gold salt selected from the group consisting of potassium gold cyanide and sodium gold cyanide, about 10 to 50 grams per liter of an organic chelating compound, about 25 to 100 grams per liter of a non-ammoniacal alkali metal salt of a weak acid to serve as a buffering and complexing agent, and a non-ammoniacal alkali metal hydroxide in an amount sufficient to bring the pH of the bath to between about 13 to 14.

3,862,851

METHOD OF PRODUCING MAGNESIUM-BASED COATING FOR THE SACRIFICIAL PROTECTION OF METALS

Kenneth K. Speirs, Universal City; Martin Weinstein, and Roy L. Blize, both of San Antonio, all of Tex., assignors to The Chromalloy American Corporation, New York, N.Y.

Division of Ser. No. 144,225, May 17, 1971, Pat. No. 3,748,172. This application Mar. 1, 1973, Ser. No. 337,163
Int. Cl. C23c *9/00*
U.S. Cl. 117—70 C **15 Claims**

1. In a method of protecting a metal substrate against the corrosive effects of saline and marine environments, the improvement which comprises, providing said substrate with a coating selected from the group consisting of sodium silicate, potassium silicate, lithium silicate and ethyl silicate and then subjecting said coated substrate to a pack cementation process at an elevated diffusion temperature comprising embedding said substrate in a pack containing by weight about 5 percent to 100 percent magnesium in particulate form and up to about 95 percent by weight of a refractory diluent together with a small but effective amount of a halide energizer and then heating said pack to said elevated diffusion temperature below the melting point of magnesium, sufficient to effect transfer of magnesium to the substrate, whereby a final coating is formed on said metal substrate containing substantial amounts of magnesium silicide to protect said metal substrate against corrosion.

3,862,852

METHOD OF OBTAINING HIGH-QUALITY THICK FILMS OF POLYCRYSTALLINE SILICON FROM DIELECTRIC ISOLATION

Theodore I. Kamins, Mountain View, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed June 1, 1973, Ser. No. 365,890
Int. Cl. C23c *11/06*
U.S. Cl. 117—106 A **4 Claims**

1. The improved method of depositing a polycrystalline silicon film on a silicon wafer comprising:

a. decomposing a silicon compound selected from the class consisting of silanes, chlorosilanes and silicon tetrochloride in the presence of hydrogen to form silicon atoms;

b. depositing the silicon atoms thus formed in polycrystalline form on a silicon wafer; and

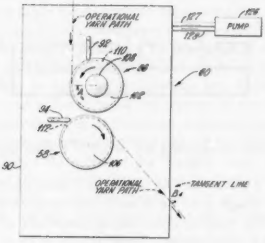
c. maintaining the ratio of oxygen atoms to hydrogen atoms during the said decomposition and deposition to less than 20 parts oxygen per million parts hydrogen, thereby minimizing degradation of the wafer due to warpage.

3,862,853

METHOD OF COATING YARN

Gustav E. Benson, Edgewood, R.I., assignor to Owens-Corning Fiberglas Corporation

Division of Ser. No. 167,399, July 29, 1971, Pat. No. 3,749,055. This application Apr. 5, 1973, Ser. No. 348,429
Int. Cl. D02g *3/24, 1/16*
U.S. Cl. 117—111 R **3 Claims**



1. The method of treating yarn with liquid coating material comprising:

advancing a yarn through a first external groove located at one side of the yarn and encircling the axis of rotation of a first rotatably mounted member;

rotating the first member to move the walls of the groove in the direction of yarn movement at a speed less than the speed of the yarn;

advancing the yarn after it has left the first groove through a second external groove located at the opposite side of the yarn and encircling the axis of rotation of a second rotatably mounted member;

rotating the second member to move the walls of the second groove in the direction of yarn movement at a speed less than the speed of the yarn; and

supplying a stream of liquid coating material to each of the grooves in advance of the yarn so that the walls of each of the grooves moves the supplied liquid coating material into contact with the yarn to effect a uniform coating of the yarn.

3,862,854

USE OF BROMINATED SULFURATED LIGNIN FOR FLAMEPROOFING INFLAMMABLE MATERIALS AND FOR THE PRODUCTION OF FLAMEPROOF BONDED ARTICLES

Esther Zeigerson, Omer, and Moshe Rudolf Bloch, Beer Sheba, both of Israel, assignors to The State of Isreal, Ministry of Development, Jerusalem, Israel

Filed Sept. 20, 1972, Ser. No. 290,581
Claims priority, application Israel, Sept. 28, 1971, 37812
Int. Cl. B44d *1/26*
U.S. Cl. 117—136 **10 Claims**

1. A method of flame proofing inflammable material comprising incorporating in or coating said material with an effective amount of a brominated sulfurated lignin.

3,862,855

PHOTOGRAPHIC RECEIVER ELEMENTS CONTAINING A COBALT(III) ION COMPLEX

Hugh Gerald McGuckin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 4, 1972, Ser. No. 312,158
Int. Cl. B44d *1/09*; C09d *3/48*
U.S. Cl. 117—161 LN **21 Claims**

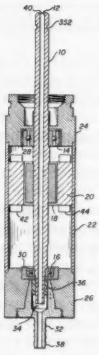
1. A photographic receiver element comprising a support having coated thereon at least 5 mg./ft.^{2} of a hydrophilic colloid having a melting point of less than 150° F. and capable

of being hardened with formaldehyde to provide a melting point differential between hardened and unhardened areas of at least 20° F., and wherein said element contains a cobalt(III) ion complex having a coordination number of 6 in a concentration of at least 0.5 percent by weight of said hydrophilic colloid based on cobalt.

3,862,856
METHOD FOR ACHIEVING THIN FILMS ON SUBSTRATES

Vern D. Shipman, Richardson, Tex., assignor to Headway Research, Inc., Garland, Tex.

Filed June 29, 1972, Ser. No. 267,683
Int. Cl. B05b *3/02*; B44d *1/02*
U.S. Cl. 117—201 **16 Claims**



1. The method of producing a dry film on a microelectronic substrate, comprising the steps of:

a. temporarily securing the microelectronic substrate to a rotary platform;

b. from a reservoir, dispensing a small quantity of a film-forming liquid onto the top of the substrate;

c. eliminating any air bubbles that may be present at the liquid/substrate interface by subjecting said platform to a plurality of reciprocal movements in the plane of the substrate in order to subject the liquid/substrate interface to a plurality of shear cycles; and

d. immediately thereafter rotating the platform in a horizontal plane at a speed of at least 1,500 rpm to foster the production of a flat, dry film on the substrate.

3,862,857
METHOD FOR MAKING AMORPHOUS SEMICONDUCTOR THIN FILMS

Richard J. Gambino, York Town Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,329
Int. Cl. H01b *13/06*
U.S. Cl. 117—201 **7 Claims**

1. A method for providing an amorphous as Te_3 semiconductor material thin film on a quartz substrate member comprising the steps of:

disposing in spaced opposing relationship in an evacuated chamber, a surface of a body of said semiconductor material which contains the components of said thin film in the desired stoichiometric proportions and which is substantially uniform in thickness and composition, said body serving as a sublimation source, and a surface of said substrate member, the distance between said surfaces being chosen to be no greater than the shortest dimension of said source surface, the area of said surface of said source being chosen to be at least equal to the area of said surface of said substrate member, said semiconductor material being one wherein the lowest vapor pressure constituent thereof has a value of at least about 0.855×10^{-8} for the ratio $P/(MT_m)^{1/2}$ wherein P is the vapor pressure in Torr of said lowest vapor pressure constituent at a temperature less than the melting point of said semiconductor material and M is the molecular weight of said last-named constituent, and T_m is the melting point of said semiconductor material; and

heating said surface of said semiconductor material body to a temperature close to but less than its melting point to cause said semiconductor material to evaporate from said semiconductor material body onto said substrate surface as an amorphous film.

3,862,858
METHOD OF MAKING FIELD EFFECT LAYERS

Melvyn E. Cowher, Katonah, and Thomas O. Sedgwick, Crompond, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1973, Ser. No. 341,821
Int. Cl. B44c *1/00*; B44d *1/02*
U.S. Cl. 117—215 **5 Claims**

1. In a method for adhering large area field-effect layers onto an electroluminescent material that is cured to a final hardness but is wet or tacky in its uncured state comprising the steps of:

providing a substrate,

depositing an electroluminescent layer on said substrate while said layer is in its tacky uncured state,

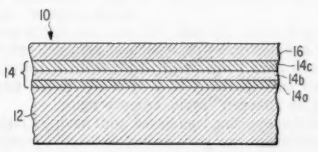
broadcasting flakes of field-effect material, of the order of two microns thick, onto said electroluminescent material, and

curing said electroluminescent material so as to permanently affix said flakes to said electroluminescent material.

3,862,859
METHOD OF MAKING A SEMICONDUCTOR DEVICE

Michael Ettenberg, Freehold, N.J., and Stephen Lee Gilbert, Newtown, Pa., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 216,376, Jan. 10, 1972, abandoned. This application July 5, 1973, Ser. No. 376,545
Int. Cl. B44d *1/16*; H01l *7/36*, *7/38*
U.S. Cl. 117—215 **4 Claims**



1. A method of making a semiconductor layered structure comprising the steps of

epitaxially depositing on a substrate a first body of a single crystalline semiconductor material having a crystal lattice substantially different from that of the substrate by depositing in sequence on the substrate separate superimposed layers of the semiconductor material of substantially the same composition, each layer being deposited from a source of the semiconductor material with the substrate being intermittently removed from and replaced in contact with the source to provide a growth interface between adjacent layers, and

depositing a second body of a semiconductor material on said first body, the semiconductor material of said second body being of a different composition than the composition of the first body but having a crystal lattice which substantially matches the crystal lattice of the first body.

3,862,860
METHOD AND COMPOSITION FOR LUBRICATING AND LUBRICATED SUBSTRATES

Robert P. Pardee; Archie L. Bickling, Jr., and Thomas J. Loran, all of Boulder, Colo., assignors to Ball Brothers Research Corporation, Boulder, Colo.

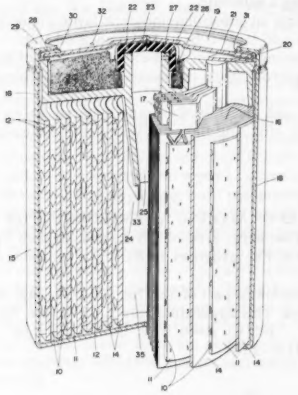
Filed June 25, 1973, Ser. No. 373,577
Int. Cl. C03c *1/00, 1/74, 3/26;* **C10m** *1/00;* **C10c** *3/24;* **C10m** *5/19, 7/28;* **B44d** *1/09;* **C09d** *3/48*
U.S. Cl. 117—239 **17 Claims**

1. A method of lubricating substrates, comprising: admixing a copolymer of trifluorochloroethylene and vinyl chloride, a tetrafluoroethylene telomer and a solvent, applying the admixture to a substrate, and removing the solvent from the admixture, whereby a lubricous coating is deposited upon the substrate.

3,862,861
MAINTENANCE-FREE TYPE LEAD ACID

Donald H. McClelland, Littleton, and John L. Devitt, Denver, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Continuation of Ser. No. 62,227, Aug. 3, 1970, abandoned. This application May 30, 1972, Ser. No. 257,719
Int. Cl. H01m *39/00*
U.S. Cl. 136—26 **23 Claims**



1. A maintenance-free type lead acid cell which sustains substantial overcharge in any indiscriminate attitude of the cell, said cell operating in a normally sealed configuration utilizing an "oxygen" cycle, comprising:

non-self-supporting lead based grids having a high hydrogen overvoltage, said grids pasted with active material to form porous positive and negative plates;

an electrolyte absorbing and retaining separator material characterized by having a high heat of wetting and intimately contacting adjacnt, opposite polarity plates;

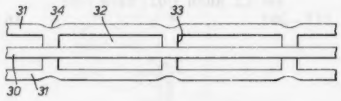
an electrolyte absorbed and retained by said separator and by said plates to the degree that no free unabsorbed electrolyte is present in the cell, said plates containing a thin layer of electrolyte on said active material sufficient to sustain electrochemical reactions at the plates and permitting oxygen transfer to and from the active material through a void volume formed in substantially all of the pores of said plates, said thin layer of electrolyte uniformly distributed throughout said plates and said void volume formed by virtue of the presence of only the thin layer of electrolyte on the active material, and

a container tightly constraining said plates, separator and absorbed electrolyte under firm stacking pressure to form a self-supporting integral cell.

3,862,862
PROCESS OF MAKING SHEATHED BATTERY ELECTRODES

Maurice Ivan Gillibrand, Manchester, and Gordon Brown, Kearsley near Bolton, both of England, assignors to Electric Power Storage Limited, Swinton, Manchester, England

Division of Ser. No. 107,284, Jan. 18, 1971, abandoned. This application May 16, 1973, Ser. No. 360,675
Claims priority, application Great Britain, Jan. 20, 1970, 2643/70; Oct. 7, 1970, 47703/70
Int. Cl. H01m *3/04*
U.S. Cl. 136—148 **11 Claims**

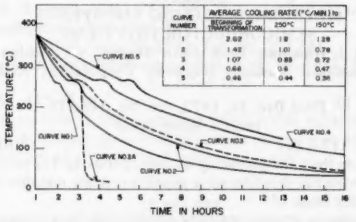


1. A process for sheathing a battery electrode in a seam-free separator envelope, comprising the steps of: providing a pasted battery electrode; positioning thereon removable masking means overlying substantially the entire pasted surface of the electrode whereby an external surface corresponding to the desired internal surface of the envelope is provided, the masking means leaving unmasked the bottom edge of the electrode whereby the envelope is closed at its bottom edge, the masking means extending beyond the side bars of the electrode so as to leave a passage at each side of the electrode to allow for grid growth; heating the assembly of the electrode and the masking means to an elevated temperature; immersing said assembly in a fluidized bed of discrete dry polymer particles whereby a cohesive porous coating of the polymer of the desired thickness is formed over the assembly; then reheating the coated assembly to sinter the coating to a tough porous sheath; and withdrawing the masking means through the top edge of the sheath so as to form at least one opening therein.

3,862,863
HEAT TREATMENT FOR WROUGHT ZINC-ALUMINUM ALLOYS

Edouard Gervais, Montreal, and Pierre Chollet, Pierrefonds, Quebec, both of Canada, assignors to Noranda Mines Limited, Toronto, Canada

Filed May 5, 1972, Ser. No. 250,556
Claims priority, application Canada, July 21, 1971, 118721
Int. Cl. C22f *1/16*
U.S. Cl. 148—11.5 R **14 Claims**



1. A heat treatment for improving the creep resistance of a wrought zinc-aluminum alloy having a zinc-aluminum eutectoid transformation, including a two-stage cooling process comprising:

a. as the first stage of said process, slow cooling the alloy from above its eutectoid temperature and below its solidus or eutectic temperature to an intermediate temperature below the eutectoid temperature whereat the eutec-

toid transformation is substantially complete, and subsequently

b. as the second stage of said process, upon attainment of said intermediate temperature, rapidly cooling said alloy to ambient temperature.

3,862,864

PLASTICIZED NITROCELLULOSE PROPELLANT COMPOSITIONS CONTAINING HYDRAZINIUM NITROFORMATE AND ALUMINUM HYDRIDE

James P. Flynn; George A. Lane, and John J. Plomer, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed June 16, 1965, Ser. No. 465,239
Int. Cl. C06d 5/06
U.S. Cl. 149—19.8 3 Claims

1. A solid double-base propellant composition comprising on a weight basis

a. from about 5 to about 35 percent of a crystalline substantially non-solvated aluminum hydride,

b. from about 20 to about 38 percent hydrazinium nitroformate, and

c. from about 30 to about 60 percent of a plasticized nitrocellulose binder.

3,862,865

SPARKLER COMPOSITION

Hugh D. McManus, Bolivar; Voorhis F. Wigal, and Robert S. Long, both of Jackson, all of Tenn., assignors to Kilgore Corporation, Toone, Tenn.

Continuation-in-part of Ser. No. 146,366, May 24, 1971, abandoned. This application Nov. 29, 1972, Ser. No. 310,457
Int. Cl. C06d 1/04
U.S. Cl. 149—19.91 13 Claims

1. A particulate sparkler composition comprising 25 – 30 parts by weight of an oxidizer at least one half of which is ammonium perchlorate; 3–14 parts by weight of iron or steel powder; from about 8 to about 15.6 parts by weight of a fuel said fuel comprising a mixture of from about 20 to about 33 percent aluminum and/or magnesium powder and accelerators plus from about 67 percent to about 80 percent of a particulate combustible binder, said binder being capable of being activated by heat, solvent or a combination thereof to cause the bonding of the particles; 0 – 5 parts by weight of a combustion rate modifier and 0 – 5 parts by weight of a flame colorant said composition when bonded together into a relatively long thin rigid stick by heat, solvent or a combination thereof having a burning rate suitable for use as a sparkler and being capable of being ignited at one end and of burning progressively to the other end giving off a shower of sparks.

3,862,866

GAS GENERATOR COMPOSITION AND METHOD

Hubert G. Timmerman, Manhattan Beach, and Vincent O. Catanzarite, Las Vegas, both of Calif., assignors to Specialty Products Development Corporation, Oak Creek, Wis.

Filed Aug. 2, 1971, Ser. No. 167,943
Int. Cl. B01j 7/00; C06d 5/06; C06b 11/00
U.S. Cl. 149—21 6 Claims

1. A deflagration composition for generating a gas comprising principally carbon dioxide and water vapor comprising a substantially homogeneous mixture of:

an oxygen bearing oxidizing powder having an average particle size less than about 25 microns; selected from the group consisting of potassium chlorate, potassium perchlorate sodium chlorate, and sodium perchlorate;

an organic reducing powder selected from the group consisting of sucrose, starch, cellulose, dextrose, dextrin, fructose, lactose, ascorbic acid, benzoic acid, maltose monohydrate, mannitol, mannoheptose, mannoheptose monohydrate, oxalic acid, propanediolic acid and glyoxylic acid, the organic reducing powder having an average particle size less than about 15 microns and solid below about 165°F, the proportion of oxidizing and reducing powders being sufficiently near stoichiometry to produce a gas upon deflagration comprising principally carbon dioxide and water vapor and an inorganic salt that is volatile at the temperature of deflagration and free of substantial carbon monoxide, nitrogen compounds, sulfur compounds and fluorine compounds; and

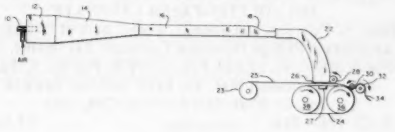
an endothermic decomposition coolant powder having an average particle size less than about 25 microns and having a thermal decomposition product selected from the class consisting of carbon dioxide and water and substantially free of ions or radicals that react with the inorganic salt during deflagration, the coolant powder being selected from the group consisting of magnesium carbonate, zinc carbonate, hydrated magnesium carbonate, borax and hydrated salts of metals having oxides stable in the presence of water, and wherein the proportion by weight comprises about one part reducing powder, three parts oxidizing powder, and from one to four parts coolant powder.

3,862,867

PROCESS FOR PRODUCING REINFORCED NONWOVEN FABRICS

Preston F. Marshall, Walpole, Mass., assignor to The Kendall Company, Walpole, Mass.

Division of Ser. No. 256,711, May 25, 1972, Pat. No. 3,816,231. This application June 27, 1973, Ser. No. 374,003
Int. Cl. D01g 25/00
U.S. Cl. 156—62.2 4 Claims



1. The process of making a nonwoven fabric which comprises passing a fluid-borne stream of textile-length fibers through a passageway having a transversely-extended smoothly curved surface curved in the direction of said stream,

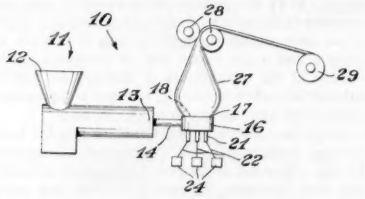
thereby changing the direction of said fluid-borne stream along said surface and causing centrifugal force on said fibers to align said fibers in a transverse direction along said surface and concentrating said fibers thereat in a narrow, transversely-extended band,

collecting said fibers of said band on a set of parallel, spaced-apart warp strands,
said warp strands extending continuously in the longitudinal direction of said fabric,
and causing a portion of said fibers to entangle with said warp strands in mechanical engagement by passing over certain of said warp strands and under other of said warp strands,
and causing an additional portion of said fibers to entangle with said warp strands by having a portion of their length wrapped around at least a portion of the perimeters of certain of said strands.

3,862,868
FILAMENT REINFORCED FILM

Frank Wayne Spillers, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 25, 1972, Ser. No. 291,811
Int. Cl. B29d *23/05*; **B29f** *3/10*; **B29c** *17/07*
U.S. Cl. 156—244 **4 Claims**

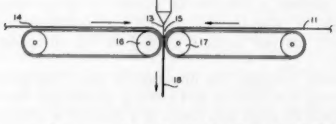


1. In a method for the preparation of synthetic resinous tubing wherein a heat plastified synthetic resinous material is extruded from an annular die in the form of a hollow tube having a wall, the tube inflated by means of internal fluid pressure to a diameter greater than the diameter of the annular orifice and the tubing subsequently collapsed, the improvement which comprises
encapsulating within the heat plastified synthetic resinous thermoplastic material within the die and prior to extrusion from the annular orifice a plurality of generally parallel, generally evenly spaced continuous filamentary reinforcing members and the reinforcing members extending in the direction of extrusion and being encapsulated within the wall and maintained within the wall during expansion and collapses whereby a collapsed tube is obtained having filamentary reinforcement within the wall of the collapsed tube.

3,862,869
METHOD OF MAKING A REUSABLE, TEAR-RESISTANT POLYOLEFIN-PAPER LAMINATE

Lenart A. Peterson, and John G. Finley, both of Chicago, Ill., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 13,413, Feb. 24, 1970, Pat. No. 3,752,732. This application Mar. 22, 1973, Ser. No. 344,024
Int. Cl. B32b *31/30*, *27/10*; **C09j** *5/02*
U.S. Cl. 156—244 **17 Claims**



1. A process for preparing a bonded polymonoolefin-paper laminate comprising in order a polymonoolefin film, a polymonoolefin bonding layer, and a fibrous cellulosic support sheet, and suited to repeated reuse, which comprises:
a. contacting a moving continuous fibrous cellulosic sheet and a moving continuous polymonoolefin film,
b. continuously extruding a hot melt of a polymonoolefin to the area of contact between said sheet and said film, wherein said film and said melt each are polymonoolefin polymers containing as a major component a common 1-monoolefin monomer, and
c. pressing together by said roller means said sheet, melt and film, and thereby forming said laminate;
wherein said polymonoolefin of said film is characterized by a melt flow or index of 0.2 to 20, and said polymonoolefin of said melt is characterized by a melt flow or index higher than that of said film and further in the range 20 to 100.

3,862,870
METHOD FOR THE PREPARATION OF INCOMBUSTIBLE COMPOSITE MATERIALS

Hiroshi Suda, and Hideo Matui, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

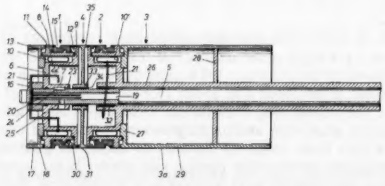
Filed Dec. 6, 1973, Ser. No. 422,429
Claims priority, application Japan, Dec. 12, 1972, 47-123999
Int. Cl. B29c *19/02*; **B32b** *3/26*
U.S. Cl. 156—273 **9 Claims**

1. A method for the preparation of an incombustible composite material, comprising:
covering a soft foam base material with a vinylidene chloride-base copolymer, which is a copolymerization product of 65–95 parts by weight of vinylidene chloride monomer, 5–35 parts by weight of a first vinyl monomer not having any unsubstituted carboxyl group and 1–10 parts by weight of a second vinyl monomer containing at least one unsubstituted carboxyl group;
drying said coating on said foam base;
interposing said coated foam between a polyvinyl chloride sheet and a hardboard sheet; and
bonding the respective layers together by high frequency welding.

3,862,871
DRUM FOR BUILDING AND SHAPING BLANKS FOR RADIAL-PLY TYRES

Gerhard Held, Hochstadt, and Walter Balle, Dornigheim-Waldsiedlung, both of Germany, assignors to Leonhard Herbert Maschinenfabrik, Bergen-Enkheim, Germany

Filed July 12, 1972, Ser. No. 271,125
Claims priority, application Germany, July 13, 1971, 2134904
Int. Cl. B29h *17/10*, *17/16*
U.S. Cl. 156—415 **15 Claims**



1. A tire carcass building and shaping drum having two initially close-spaced bead holders, said bead holders being axially shiftable to increase the spacing therebetween, an extension drum being coaxially fixed to each of said bead holders and extending from the outer end thereof for supporting an end portion of said tire carcass axially slidably thereon,

radially expandible elements on the periphery of said bead holders, said radially expandible elements having grooves and being expandible to bring said grooves into direct air-tight engagement with the tire carcass, said bead holders and tire carcass closing an air-tight space therewithin, means for introducing a pressure medium into said space, a supporting element for the tire carcass disposed between said bead holders, and a fastening means at said supporting element for axially fixing thereto of a tire carcass.

3,862,872

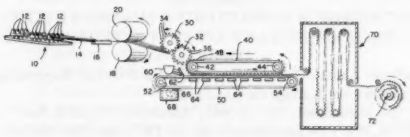
APPARATUS FOR MAKING NON-WOVEN PILE FABRIC

Charles Edwin Hoey, Marlton, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 64,722, Aug. 18, 1970, Pat. No. 3,723,213. This application Aug. 17, 1972, Ser. No. 281,571

Int. Cl. D04h *11/04*

U.S. Cl. 156—435 **7 Claims**



1. Apparatus for making non-woven pile fabric comprising: yarn supply means, two intermeshing toothed rolls for forming loops having upper and lower bight portions in the yarn from the yarn supply means, backing material supply means, first conveyor means for conveying backing material from said backing material supply means beneath said loop forming means, second conveyor means for receiving yarn having loops formed therein from said loop forming means, said second conveyor means being disposed substantially parallel with and above said first conveyor means, said second conveyor means comprising a continuous flexible belt having a plurality of spaced ribs formed thereon, end rolls at each end of said second conveyor, said flexible belt being in position to travel around said rolls, said loop forming means being positioned adjacent one of said end rolls, the teeth of one of said loop forming rolls intermeshing with the ribs of said flexible belt while said belt is positioned on one of said end rolls whereby the looped yarn is received in said second conveyor and pinched by said ribs during the passage of said belt between said end rolls, said second conveyor means being so spaced from said first conveyor that the lower bight portions of the loops formed in the yarn are moved downwardly into the body of backing material on said first conveyor means and said ribs do not contact said backing material.

3,862,873

DEVICES TO MANUFACTURE LARGE WEBS OR SHEETS OF SYNTHETIC FOIL MATERIAL FROM EXTRUDED STRIPS JOINED TOGETHER ALONG THEIR EDGES

Werner Blose, Hamburg, Germany, assignor to Schlegel GmbH, Hamburg, Germany

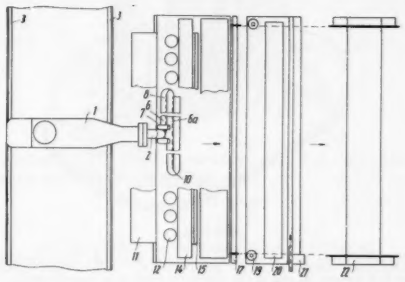
Division of Ser. No. 169,615, Aug. 6, 1971, Pat. No. 3,765,982. This application June 8, 1973, Ser. No. 368,104

Claims priority, application Germany, Aug. 7, 1970, 2039236

Int. Cl. B29b *5/00*

U.S. Cl. 156—500 **8 Claims**

2. A device for manufacturing large webs or sheets of synthetic foil material from extruded strips joined together along their edges, comprising, a frame, an extruding means having an extruder nozzle and mounted on said frame movable in a reciprocating motion, means for driving said extruding means, guide means for guiding said extruding means, said driving means moving said extruding means back and forth between first and second end positions, supporting means arranged for deposition of the extruded strip from said extruder nozzle on a surface thereof, means for moving said support means crosswise to the direction of movement of said extruding means, said means being effective to move said support means in an incremental step in a first direction each time said extruding means reaches, in its reciprocating motion, either said first or



second end position, whereby said extruded strip is deposited on said support means in a series of strip portions which are in contact along adjacent edges thereof, and at least one pressure roller associated with said extruder means and operable to press the adjacent edges of the respective strips together to thereby form the large webs or sheets.

3,862,874

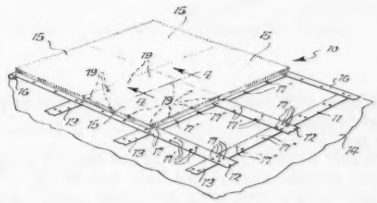
MODULAR RUG CONSTRUCTION

Joan M. Hopper, 4236 Seneca St., West Seneca, N.Y. 14224, and Helen M. Dickey, 33 Wabash, Kenmore, N.Y. 14217

Filed Mar. 12, 1973, Ser. No. 339,713

Int. Cl. B32b *3/10, 3/10*

U.S. Cl. 161—36 **8 Claims**



1. A modular rug construction comprising a plurality of modular rug units, and attachment means for detachably securing said modular rug units relative to each other, said attachment means comprising tape means in the form of elongated strips having first fastener means thereon, and second fastener means on said modular rug units for selective engagement and disengagement with said first fastener means.

3,862,875

FILLER MASKING OF SMALL APERTURES

Gary Uchytil, Campbell, Calif., assignor to Micro Science Associates, Mountain View, Calif.

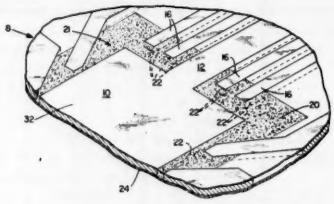
Division of Ser. No. 125,098, March 17, 1971, Pat. No. 3,725,215. This application July 3, 1972, Ser. No. 268,411

Int. Cl. B32b *3/10, 7/04*

U.S. Cl. 161—38 **1 Claim**

1. A sheet for selectively electroplating surface portions thereof comprising a flat metallic sheet member including a plurality of passages extending through the member perpendicular to sides thereof, the passages being defined by walls

extending from one side of the member to another side thereof, the walls being spaced apart up to about 10 to 12 millimeters, a thin film of a photo-conductive material releasably adhered to said one side of the member and closing one end of the passages, and a photo-hardenable material disposed in and completely filling the passages, having a thickness



corresponding to the thickness of the member and contacting the full extent of the walls defining such passages between the sides of the member to prevent the plating of the walls when the sheet is submerged in an electro-plating bath, the photo-conductive material permitting passage of the radiation energy which hardens the photo-hardenable material.

3,862,876

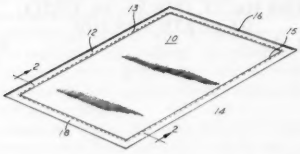
PROTECTIVE EDGE WEIGHTED COVER CLOTH

James E. Graves, 485 Jay St., Lakewood, Colo. 80215

Filed Apr. 2, 1973, Ser. No. 347,149

Int. Cl. B32b *3/02, 3/04, 5/16*

U.S. Cl. 161—44 **8 Claims**



1. A cover cloth article for covering an object or an area, said article comprising:

a. a body of flexible sheet material;

b. flexible weight means arranged continuously along at least opposite edges of said body, said flexible weight means being a loose, particulate weight material; and

c. means for securing said weight means to the edge of said body, said securing means being at least one elongated closed tube formed from flexible material and arranged to contain the particulate material of said flexible weight means, said flexible elongated tube being joined to the edge of said body for holding the body over said object or area to prevent its disarray by extrinsic forces such as wind.

3,862,877

CLOTHLIKE TISSUE LAMINATES

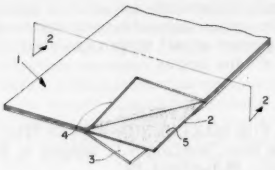
James Berger Camden, Memphis, Tenn., assignor to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Filed May 22, 1972, Ser. No. 255,626

Int. Cl. B32b *5/12*

U.S. Cl. 161—57 **22 Claims**

1. The clothlike tissue laminate comprising a central tissue layer impregnated with about 250% to about 800%, based on the fibrous weight of the central tissue layer, of soft, pliable latex binder solids having a glass transition temperature of about 10°C. to about −80°C. and a tack test of about 2 pounds to about 40 pounds, which central tissue layer is provided with and bonded to an upper tissue layer and a nether tissue layer, as facing tissue layers on its respective surfaces, and wherein



the central tissue layer, the upper tissue layer and the nether tissue layer each have a basis weight of 1 pound to about 30 pounds per 3,000 square feet.

3,862,878

METHOD OF MANUFACTURING FOAMED PLASTIC TUBULAR NETS AND APPARATUS PERTINENT THERETO

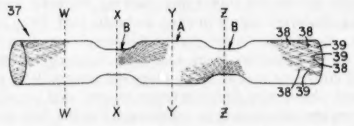
Kimikazu Azuma, No. 3-18, Matsugaoka 3-chome Kugenuma, Fujisawa-shi Kanagawa-Ken, Japan

Division of Ser. No. 129,445, March 30, 1971, Pat. No. 3,758,359. This application Apr. 13, 1973, Ser. No. 350,765

Claims priority, application Japan, Apr. 2, 1970, 45-28086; Apr. 2, 1970, 45-28087

Int. Cl. B32b *3/20, 5/12*

U.S. Cl. 161—58 **14 Claims**



1. An article of manufacture comprising: an axially elongated, cylindrical, extruded, hollow tube which is open at the opposite ends thereof, said tube comprising adherent inner and outer tubular layers, each layer comprising a plurality of spaced-apart, continuous, substantially parallel, foamed synthetic resin strands, the strands of at least one of said layers being wound helically about the longitudinal axis of said tube and crossing the strands of the other layer and being integrally connected to the strands of the other layer at the points where the strands of the respective layers cross each other so that said layers form a unitary mesh side wall of said tube, said tube having, at regular axially spaced intervals therealong, neck portions whose inner and outer diameters are substantially less than the inner and outer diameters of the portions of said tube on axially opposite sides of said neck portions.

3,862,879

ARTICLES COATED WITH AIR FROTHED POLYURETHANE FOAMS

Benny G. Barron, and James R. Dunlap, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 340,418, March 12, 1973, abandoned, which is a division of Ser. No. 247,856, April 26, 1972, abandoned. This application May 18, 1973, Ser. No. 361,674

Int. Cl. B32b *5/20;* **C08g** *22/44*

U.S. Cl. 161—159 **6 Claims**

1. An article comprising a substrate having a flexible polyurethane foam backing obtained by applying a frothed polyurethane forming composition to said substrate and subsequently allowing said frothed composition to cure; wherein said flexible polyurethane foam backing has a density of less

than about 15 lbs/ft.^{3} calculated on the basis of the urethane forming components, and results from curing a composition which has been frothed by mechanically inducing into such compositon a substance which is in the gaseous state at standard temperature and pressure, said composition being void of a silicone oil cell control agent and which comprises

1. an active hydrogen-containing composition comprising
   a. from about 50 to 100 parts by weight of a polyether polyol having a hydroxyl functionality of from 2 to 3 and containing an end-cap of at least 2 moles of ethylene oxide per active hydrogen atom or an internal block of at least 3 moles of ethylene oxide per active hydrogen atom or combination thereof and having an OH equivalent weight of from about 1000 to about 2500 and
   b. from 0 to about 50 by weight of an aromatic amine, a glycol or mixture thereof,
2. a polyisocyanate-containing material selected from the group consistong of
   a. an isocyanate terminated prepolymer resulting from the reaction of an organic diisocyanate with a compound having from 2 to 4 hydroxyl groups per molecule and an OH equivalent weight of from about 53 to about 1000,
   b. polymeric polyisocyanates,
   c. crude aromatic diisocyanates and
   d. mixtures thereof, and
3. a catalyst for urethane formation, wherein (1) and (2) are employed in quantities so as to provide an NCO:OH ratio of from about 0.85:1 to about 2.0:1

3,862,880

LAMINATE FOR REFRIGERATION APPARATUS, REFRIGERATOR AND METHOD OF FORMING SAME

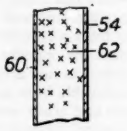
Peter Blandford Feldman, St. Denys-Westrem, Belgium, assignor to SIDAPLAX, Gentbrugge, Belgium

Filed Aug. 10, 1973, Ser. No. 387,294

Claims priority, application Great Britain, Aug. 21, 1972, 38944/72

Int. Cl. B32b *5/18*

U.S. Cl. 161—160 **2 Claims**



1. A laminate comprising a biaxially oriented film of a rubber-modified copolymer of styrene and acrylonitrile sandwiched between and bonded to a sheet of rubber-modified polystyrene which includes from 2 to 20 weight percent rubber therein, and a sheet of polyurethane foam.

3,862,881

MOLDED LAMELLAR GYPSUM PRODUCT

Takashi Taniguchi; Kunihiro Abe, and Takashi Sugimoto, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed July 16, 1973, Ser. No. 379,306

Claims priority, application Japan, July 19, 1972, 47-71648

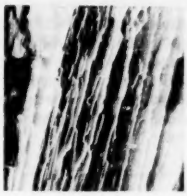
Int. Cl. B32b *13/02*

U.S. Cl. 161—162 **8 Claims**

1. A molded gypsum product which comprises gypsum crystals having a lamellar structure.

2. A molded gypsum product according to claim 1 wherein said product has a core made of β-form gypsum.

4. A molded gypsum product the gypsum component of which has a crystalline structure by X-ray diffraction, said



crystalline structure being characterized in that (**010**) planes thereof are arranged in one direction.

3,862,882

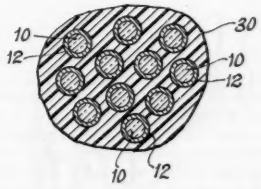
GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sept. 25, 1972, Ser. No. 292,025

Int. Cl. B32b *5/02*; **C03c** *25/00*; **C08g** *51/16*

U.S. Cl. 161—170 **12 Claims**



1. A glass fiber bundle comprising a plurality of glass fibers, and an impregnant in the bundle, said impregnant comprising a blend of (1) an amine-amide having the formula

$$H_2N\text{-}NH\text{-}\overset{O}{\overset{\|}{C}}\text{-}R\text{-}\overset{O}{\overset{\|}{C}}\text{-}NH\text{-}NH_2$$

wherein R is a divalent organic group containing 1 to 18 carbon atoms, (2) a resorcinol-aldehyde resin and (3) at least one elastomer.

3,862,883

METAL-RUBBER ADHESION SYSTEM

Stephen E. Cantor, Cheshire, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,273

Int. Cl. B32b *15/08*, *15/06*

U.S. Cl. 161—215 **14 Claims**

1. A laminar rubber structure of vulcanized rubber reinforced with a metallic reinforcing element having a surface of brass wherein the vulcanized rubber adjacent to said element contains the reaction and decomposition products formed during vulcanization by reason of the presence in the rubber before and during vulcanization of (a) a halogen donor selected from the group consisting of (1) N,N-dihalogenated aromatic sulfonamides wherein the sulfonamide nitrogen is bonded to two atoms of chlorine, bromine or iodine and the sulfonyl sulfur is bonded directly to the aromatic nucleus and (2) cyclic N-halogenated amides wherein a carbonyl carbon in the ring is bonded to two nitrogen atoms, each of said nitrogen atoms in turn being bonded to the halogen atom thereby forming the grouping

wherein X is chlorine, bromine or iodine and (b) a material selected from the group consisting of resorcinol, m-aminophenol, m-phenylene diamine, resorcinol monoacetate, resorcinol diacetate, 1,5-naphthalenediol, partially reacted resorcinol-formaldehyde resins, condensation products of resorcinol and acetone and condensation products of resorcinol and acetaldehyde.

3,862,884

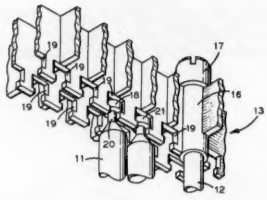
FUEL ASSEMBLY FOR A NUCLEAR REACTOR

Felix S. Jabsen, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Continuation of Ser. No. 2,767, Jan. 14, 1970, abandoned. This application Nov. 21, 1972, Ser. No. 308,641

Int. Cl. G21c *3/34*

U.S. Cl. 176—78 **1 Claim**



1. In a fuel assembly for a nuclear reactor having a plurality of fuel rods and guide tubes maintained in adjacent parallel relationship by grids positioned in spaced relationship along the length of said rods and intermediate the ends of the rods, the improvement comprising:

An upper end grid for dependently supporting the fuel rods having parallel rows of T-shaped slots, a number of cylindrical guide tube fittings spaced from each other and in adjacent relationship with said T-shaped slots, said fittings being of open end construction positioned in the upper end grid,

A T-shaped key provided on one end of each of the fuel rods for separable supporting engagement with said T-shaped slots,

guide tubes each having an end passing through said cylindrical guide tube fittings and engagement means for securing said guide tubes in position,

A projecting pin provided on the opposite end of each of the fuel rods,

A lower end grid having an array of recesses and cylindrical guide tube fittings of open end construction received within said lower end grid,

said guide tubes passing through said cylindrical guide tube fittings and separably secured therein for supporting engagement of said lower end grid, and said recesses adapted for separable supporting engagement of said projecting pins.

3,862,885

DETERMINATION OF URIC ACID IN BLOOD WITH URICASE

Kunio Kano, Ibaraki; Naohiro Kayama, Takatsuki; Hiroshi Terashima, Ibaraki, and Yoshitaka Nakagiri, Inuyama, all of Japan, assignors to Ono Pharmaceutical Co., Ltd. and Toyo Boseki Kabushiki Kaisha, both of Osaka, Japan

Filed Nov. 19, 1971, Ser. No. 200,582

Claims priority, application Japan, Nov. 25, 1970, 45-103966

Int. Cl. C07g *7/02*; C12k *1/00*

U.S. Cl. 195—103.5 R **14 Claims**

1. A process for quantitatively determining uric acid in blood with a yeast originated uricase which comprises reacting the uricase with the uric acid in blood at a pH of 5.7–6.5 to generate hydrogen peroxide and measuring the generated hydrogen peroxide.

3,862,886

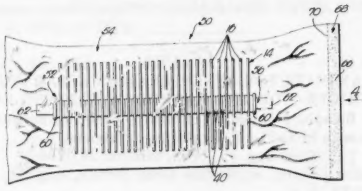
STERILE PLATE COMPONENT PACKAGE FOR CULTURE GROWING APPARATUS

John Liner, Woodbridge, Conn., assignor to Limbro Chemical Co., Inc., New Haven, Conn.

Filed Sept. 20, 1973, Ser. No. 398,983

Int. Cl. C12b *1/04*; C12k *1/10*

U.S. Cl. 195—127 **12 Claims**



1. A plate component package for a processing container of culture-growing apparatus, comprising a temporary sterile plate unit having a plurality of plates with center apertures and opposite faces for culture adherence, a plurality of apertured spacers, an arbor on which said plates and spacers are slidably received with their apertures and with the spacers interposed between the plates to form a column of spaced plates, and retainers on said arbor at the opposite ends of said plate column for holding the latter on said arbor, with at least one of said retainers being removable from said arbor for slide-off of said plate column from said arbor, and said arbor having an endlength extending beyond the other of said retainers; and a sealed wrapper enclosing said plate unit, and being breakable for removal of said one retainer and plate column from said arbor and wrapper.

3,862,887

METHOD FOR PROCESSING HEAT-DECOMPOSABLE NON-GASEOUS MATERIALS

Edward T. Bielski, Sappington; Daryl L. Lackey, Chesterfield, and Russell V. Theiss, St. Louis, all of Mo., assignors to Monsanto Enviro-Chem Systems, Inc., Chicago, Ill.

Division of Ser. No. 210,655, Dec. 22, 1971, Pat. No. 3,794,565, which is a continuation-in-part of Ser. No. 54,495, July 13, 1970, abandoned. This application July 30, 1973, Ser. No. 383,954

Int. Cl. C10b *51/00*

U.S. Cl. 201—2.5 **8 Claims**

1. A method for treating shredded solid muncipalwaste comprised of solid heat-decomposable material andwhich tends to form an entangled mass upon rotary tumbline, within an inclined rrotary tubular chamber by the pyrolytic decomposition thereof to form a hot solid residue and gaseous pyrolytic decomposition products, which method comprises:

a. feeding said material into said rotary tubular chamber proximate a first end thereof, said first end being elevated with respect to the opposite end thereof;

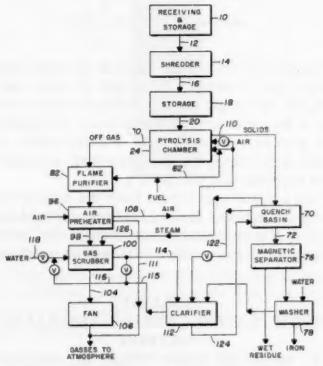
b. heating the resulting bed of said material within said rotary tubular chamber to a temperature sufficient to result in at least partial pyrolytic decomposition of said material into gaseous pyrolytic decomposition products and a hot solid residue, said bed of said material bening maintained in a substantialy nonoxidizing atmosphere as said material is being pyrolyzed; said heating of said material resulting in part from an open flame from a burner located proximate said opposite end of said rotary tubular chamber such that said open flame is disposed within said rotary tubular chamber in an unresitrcted, spaced relationship with said material so that said materal is heated by direct radiation from said open flame, and the remainder of said heating of said material resulting from the oxidation of siad gaseous pyrolytic decomposition products in step(c);

c. concurrently admitting oxygen into said rotary tubular chamber proximate said opposite end thereof in an amount sufficient to result in the oxidation of at least part but not mor than 60 percent of said gaseous pyrolytic decomposition products, said oxygen mixing with said gaseous pyrolytic decomposition products and resulting in at least partial combustion thereof, based upon the oxygen present, within said rotary tubular chamber, said substantially non-oxidizing atmosphere referred to in step (b) being substantially maintained beteen said bed of material and said combusting gaseous pyrolytic decomposition products,

d. concurrently agitating said bed of material within said rotary tubular chamber by the rotary motion thereof coupled with a mechanical hot knifing and separating action applied to said bed of material in a manner which minimizes entainment of said material in the moving stream of gases,

e. continuously withdrawing the resulting gaseous mixture of said gaseous pyrolytic decomposition products and the partial combustion products thereof from said rotary tubular chamber proximate said first end thereof, and

f. discharging said hot solid residue from said rotary tubular chamber proximate said opposite end thereof.

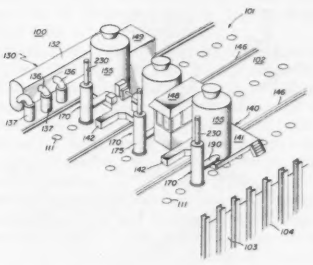


3,862,888

SYSTEM FOR PREVENTING EFFLUENT EMISSIONS FROM COKE OVENS

Frank K. Armour, Flossmoor, and Peter Prince, Alsip, both of Ill., assignors to Interlake, Inc., Chicago, Ill.

Filed July 24, 1972, Ser. No. 274,326
Int. Cl. C10b *27/04*
U.S. Cl. 202—263 **23 Claims**

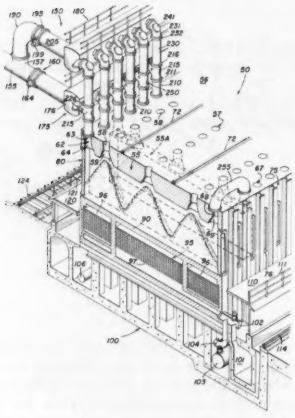


1. A system for preventing effluents from being emitted through a port in a coke oven upon charging the coke oven with coal wherein the port has an upper portion and an enlarged lower portion, comprising a larry car for transferring coal from a source thereof to the coke oven, a coal hopper mounted on said larry car and having an entrance thereto for receiving coal from the source thereof and having an exit therefrom for dispensing coal into the port in the coke oven, a charging apparatus mounted externally of said coal hopper in continual communication therewith for transferring coal to the coke oven from said coal hopper through said exit therein, said charging apparatus including a sleeve in communication with said coal hopper and pivotally movable with respect thereto between a first position wherein said sleeve is spaced from the port to facilitate the movement of said larry car and a second position wherein said sleeve is in engagement with the port thereby to align said charging apparatus therewith, a conduit mounted within said sleeve and having transverse dimensions less than the upper portion of said port to fit therein and movable between a first position wherein said conduit is spaced from the engaging end of said sleeve to facilitate movement of said larry car and a second position wherein one end of said conduit extends through the upper portion of said port and into the enlarged portion of the port for charging coal to the coke oven to prevent coal from clogging the ports, the discharge end of said conduit in the second position thereof being spaced from the walls of said enlarged portion of the port to permit effluents to flow through the space between said conduit and the walls of the enlarged portion of the port, means for moving said conduit to the second position thereof when said sleeve is in the second position thereof and for moving said sleeve to the first position thereof when said conduit is in the first position thereof, means for transferring coal from said hopper through said charging apparatus to the coke oven when said sleeve and said conduit are in the second positions thereof, and an effluent collector in communication with the coke oven for collecting effluents produced during the charging of coal into the coke oven and prevented from escaping therefrom into the atmosphere, whereby effluents normally vented to the atmosphere during the transfer of coal from said coal hopper to the coke oven are prevented from being vented to the atmosphere and are collected by said effluent collector.

3,862,889
COKE OVEN CHARGING SYSTEM

Earl F. Lowe, Jr., Flossmoor, Ill., assignor to Interlake, Inc., Chicago, Ill.

Filed Aug. 28, 1972, Ser. No. 284,240
Int. Cl. C10b *27/06*
U.S. Cl. 202—263 16 Claims

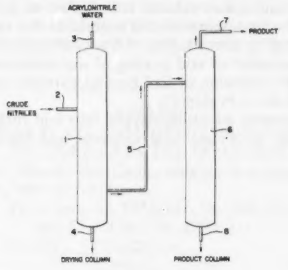


1. A system for preventing effluents from being emitted from coke ovens upon charging certain of the coke ovens with coal while coking coal in others of the coke ovens, comprising means connected adjacent to one end of a first oven and adjacent to one end of a second oven for collecting effluents therefrom, a source of sub-atmospheric pressure connected to said one end of the first oven and to said one end of the second oven, a first valve between said collecting means and the first oven and a second valve between said collecting means and the second oven, a third valve between said source of sub-atmospheric pressure and the first oven and a fourth valve between said source of sub-atmospheric pressure and the second oven, control means between said source of subatmospheric pressure and said first and second valves to maintain a positive pressure in said collecting means, and means for providing communication between the other ends of the first oven and the second oven during charging of one of the ovens with coal, said first and said fourth valves being in the open position thereof and said second and said third valves being in the closed position thereof during charging of the first oven while coking in the second oven, said first and said fourth valves being in the closed position thereof and said second and said third valves being in the open positions thereof during charging of the second oven while coking in the first oven, whereby a portion of the gases present in the charging oven prior to the charging thereof and the effluents produced during the charging thereof is collected by said collecting means and the remainder is transferred through said communication means to the coking oven where the oxygen is reacted and thereafter the remainder having the oxygen removed therefrom is transferred by said source of subatmospheric pressure out of the coking oven to prevent emission of effluents from the charging oven during the charging thereof with coal.

3,862,890
FRACTIONAL DISTILLATION USING A VAPOR SIDE STREAM TO CONTROL HCN CONCENTRATION IN PURIFICATION OF CRUDE NITRILES

Robert D. Presson, 23460 Cannon Rd., Bedford Heights, 44146, and Albert J. Grigsby, 2008 Pinelawn Dr., Toledo, both of Ohio 43614

Continuation-in-part of Ser. No. 177,553, Sept. 3, 1971, abandoned. This application Nov. 5, 1973, Ser. No. 412,703
Int. Cl. C07c *121/32*
U.S. Cl. 203—71 5 Claims



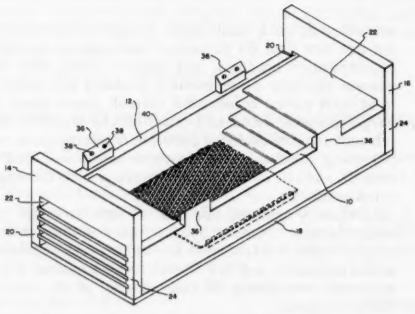
1. In the process for the purification of crude acrylonitrile containing 2 to 12 percent by weight of water and 300 to 15,000 p.p.m. by weight of HCN, wherein crude acrylonitrile is fed to a drying column and fractional distillation is conducted to give an overhead stream of acrylonitrile, water and HCN, and a bottoms stream containing acrylonitrile and HCN, the improvement comprising

removing a vapor side stream from the bottom half of the drying column, and feeding said vapor side stream to the top half of a product column wherein distillation is conducted to remove purified acrylonitrile overhead.

3,862,891
UNIFORM PLATING CURRENT APPARATUS AND METHOD

Eugene C. Smith, Elk Grove Village, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 24, 1973, Ser. No. 399,894
Int. Cl. C23b *5/58*; B01k *3/00*
U.S. Cl. 204—27 6 Claims



1. A uniform plating current apparatus for providing a uniform flow of plating current in an electrolyte solution between a plating rack carrying a work piece to be plated that forms a cathode and a quadrangular anode structure, comprising:

two generally parallel surfaces of nonconductive composition positioned along two opposite sides of the anode surface and extending upwardly from the anode to the plating rack area; and

a first and second plurality of flow-blades running transversely between said parallel surfaces and along the remaining two edges of the anode structure, said first plurality of flow-blades spaced one above the other along the distance between the anode surface and the plating rack area and said second plurality of flow-blades spaced one above the other along the distance between the anode structure and the plating rack area.

3,862,892

ALUMINIUM OBJECT WITH ANODIC OXIDE SURFACE

Werner Lautenschlager, Stuttgart; Siegfried Pahlke, Bobingen/Rems, and Gunther Tolg, Schwabisch-Gmund, all of Germany, assignors to Max-Planck-Gesellschaft zur Forderung der Wissenschaften e. V., Gottingen, Germany

Filed Jan. 22, 1973, Ser. No. 325,765

Claims priority, application Germany, Jan. 25, 1972, 2203445

Int. Cl. C23b *9/02*

U.S. Cl. 204—58 **9 Claims**

1. Process for the production of an aluminum shaped object having an oxidized surface by anodic oxidation in an electrolyte which process comprises contacting the surface of an aluminum shaped object in a weakly acidic to alkaline electrolyte bath containing sodium carbonate and sodium fluoride with sparkovers at a spark voltage of more than 80 V. and very high current density.

3,862,893

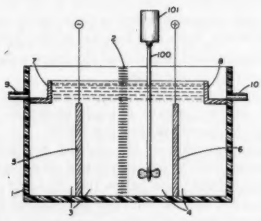
ELECTROLYTIC CELL METHOD FOR TRANSFER OF DISPERSED SOLIDS FROM ONE LIQUID ELECTROLYTE TO ANOTHER WITH SUPPRESSION OF TRANSFER OF DISPERSING LIQUID

Allan B. E. Gilchrist, Westlake, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Filed July 24, 1974, Ser. No. 491,387

Int. Cl. B01d *13/02*

U.S. Cl. 204—180 R **10 Claims**



1. In a process for recovering electrodepositable coating binder from a dilute liquid dispersion thereof utilzing an electrolytic cell apparatus divided into two half-cell compartments, each containing a half-cell electrode, by a separator which is electrically non-conductive, freely and non-selectively permeable through at least a portion of its area to liquid dispersions containing electrodepositable coating binder, and effective for arresting turbulent transmission of liquid contents of either of the half-cell compartments to the other of the half-cell compartments in the substantial absence of hydraulic pressure difference across the permeable portion of the separator while permitting hydraulic and electrical communication of respective liquid contents of the two half-cell compartment through the separator, the improvement which comprises:

a. supplying to one of the half-cell compartments, to make contact with the half-cell electrode thereof and with the permeable portion of the separator, the dilute liquid dispersion of electrodepositable coating binder from which binder is to be recovered;

b. supplying to the other of the half-cell compartments, to make contact with the half-cell electrode thereof and with the permeable portion of the separator, a concentrated liquid dispersion containing dispersed electrodepositable coating binder of substantially the same composition as the binder to be recovered and at a concentration greater than the binder concentration in the dilute liquid dispersion;

c. establishing substantially hydraulic pressure equilbrium between the dilute and concentrated dispersions in the respective half-cell compartments where those dispersions communicate through the separator to substantially prevent hydraulic flow through the separator; and

d. impressing upon the half-cell electrodes in the respective half-cell compartments, from an external emf source, an electrical potential difference of polarity and magnitude effective to drive electrodepositable coating binder from the dilute liquid dispersion through the separator into the concentrated liquid dispersion, thereby depleting the dilute liquid dispersion in electrodepositable coating binder.

3,862,894

METHOD OF ELECTRODEPOSITING NON-AQUEOUS CATIONIC DISPERSIONS AND ARTICLES PRODUCED THEREBY

Kathleen A. McGuire, Natrona Heights; Charles M. Hansen, Monroeville, and Roger M. Christenson, Gibsonia, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 14, 1972, Ser. No. 218,004

Int. Cl. B01k *5/02*

U.S. Cl. 204—181 **24 Claims**

1. A method of coating a conductive substrate which comprises passing an electric current between an electrically conductive electrode and an electrically conductive counter electrode in electric contact with a non-aqueous coating composition comprising a dispersion of a polymer

a. which contains basic nitrogen atoms; and

b. which contains a dispersion stabilizer in an organic dispersion liquid, said dispersion stabilizer being a branched copolymer containing two polymeric segments wherein one segment is solvated by the organic dispersion liquid and wherein the second segment is

c. an anchor polymer of different polarity to the first segment;

d. relatively non-solvatable by the organic dispersion liquid; and

e. anchored to said polymer by the copolymerization of pendant groups which are a part of said anchor polymer with ethylenically unsaturated monomers which are employed in forming said polymer.

15. An article of manufacture comprising a substrate having thereon an electrodeposited coating applied by passing an electric current between an electrically conductive electrode and an electrically conductive counter electrode in electric contact with a non-aqueous coating composition comprising a dispersion of a polymer

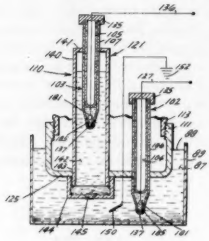
a. which contains basic nitrogen atoms; and
b. which contains a dispersion stabilizer in an organic dispersion liquid, said dispersion stabilizer being a branched copolymer containing two polymeric segments wherein one segment is solvated by the organic dispersion liquid and wherein the second segment is
c. an anchor polymer of different polarity to the first segment;
d. relatively non-solvatable by the organic dispersion liquid; and
e. anchored to said polymer by the copolymerization of pendant groups which are a part of said anchor polymer with ethylenically unsaturated monomers which are employed in forming said polymer.

3,862,895

SELF-COMPENSATING ELECTRODE SYSTEM

Karl Lewis King, Milwaukee, and James R. Arrington, Muskego, both of Wis., assignors to Great Lakes Instruments, Inc., Milwaukee, Wis.

Division of Ser. No. 43,864, June 5, 1970, Pat. No. 3,709,796. This application Sept. 5, 1972, Ser. No. 286,156
Int. Cl. G01n *27/36, 27/46*
U.S. Cl. 204—195 R **3 Claims**



1. A device for measuring ion concentration or electrode potential in an electrolytic test solution comprising:

a first measuring electrode means including a first sensing element and an electrolytic standard solution in contact therewith and containing ions corresponding with those to be measured in said test solution, said electrode means producing a first potential in response to said standard solution and said means being constructed and arranged for said standard solution to be placed in electrolytic contact with said test solution,

a second measuring electrode means including a second sensing element composed in the same material as the first sensing element, said second electrode means being constructed and arranged for being placed in said test solution for said second sensing element to produce a second potential in response to ions to be measured in said test solution,

a reference electrode means constructed and arranged for being in electrically conductive relationship with said test solution to be measured simultaneously with said first and second electrode means, said reference electrode means serving as a common electrical reference point for said first and second electrode means, said reference electrode means being connected to the zero volt reference of the measuring circuit,

means for measuring the potential difference between said first electrode means and said reference electrode means, means for measuring the potential difference between said second electrode means and said reference electrode means, and

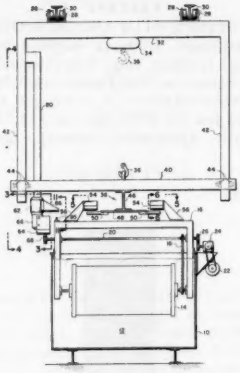
means for measuring the differential potential between said measured potential differences.

3,862,896

ROTARY BARREL PICK-UP IN AUTOMATIC PLATING APPARATUS

Albert Singleton, 7360 Brookside Park, Middleburg Heights, Ohio 44130

Filed July 20, 1973, Ser. No. 380,968
Int. Cl. B65g *49/00;* **C23b** *5/78;* **B08b** *3/00*
U.S. Cl. 204—198 **10 Claims**



1. In the combination of a rotary electroplating barrel a frame for supporting said barrel for rotation within tanks containing liquid used in electroplating, a drive shaft mounted in said frame, a drive shaft engaging means for converting drive shaft rotation to barrel rotation, a first drive motor means for turning the drive shaft, said motor means being mounted in stationary position adjacent each said tank, means for raising and lowering said frame and barrel to move them from one tank to another, said tanks being aligned beneath track means supporting a second frame, said second frame comprising a part of said raising and lowering means, a second drive motor means mounted on the second frame for rotating the drive shaft and barrel only between the times the drive shaft is moved out of operative engagement with the first drive motor means and the time it re-engages the first or a similar motor means, the improvement comprising:

first bracket means rigidly attached to the barrel supporting frame and second bracket means rigidly attached to the second frame, both said bracket means being for cooperative engagement to connect the frames during the lifting and lowering of the barrel,

the portion of the first bracket means which engages the second bracket means extends above all adjacent portions of the barrel supporting frame,

the engaging portion of the second bracket means in its lowermost position extends below all adjacent portions of the second frame and below the engaging portions of the first bracket means whereby the second bracket means and second frame will move horizontally along said track means without contacting the barrel supporting frame or the first bracket means and,

said second frame and said second bracket being rigidly connected together to prevent lateral movement of the second bracket relative to said track.

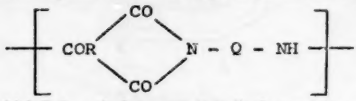
3,862,897
METHOD OF FORMING HIGH ELONGATION POLYAMIDE-IMIDE FILMS

Jean Gattus, La Mulatiere, and Maurice Mallet, Lyon, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Division of Ser. No. 69,493, Sept. 3, 1970, Pat. No. 3,792,019. This application Oct. 18, 1972, Ser. No. 298,654
Claims priority, application France, Sept. 5, 1969, 69.30338
Int. Cl. B29d *7/24*
U.S. Cl. 264—216 **9 Claims**

1. A process for the production of a polyamide-imide film with a high elongation at break which consists essentially of carrying out the following steps in sequence:

i. casting a solution of a polyamide-imide which consists essentially of a succession of structural units of formula:



in which R is a trivalent organic radical containing at least 2 carbon atoms and Q is a divalent radical containing at least one benzene nucleus,

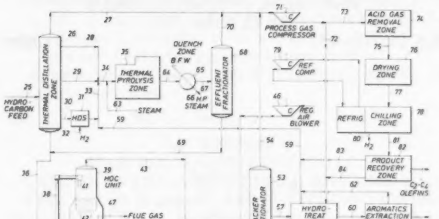
ii. stretching the resulting film while it still contains at least 1% of solvent, to a ratio between 1.1 and 1.6, in at least one direction, at a temperature between 100° and 350°C.,

iii. giving the film a supplementary heat treatment at a temperature between 100° and 350°C., the film being essentially prevented from shrinking in any direction in its plane during steps (ii) and (iii).

3,862,898
PROCESS FOR THE PRODUCTION OF OLEFINICALLY UNSATURATED HYDROCARBONS

Harold B. Boyd, and James R. Lambrix, both of Houston, Tex., assignors to Pullman Incorporated, Chicago, Ill.

Filed July 30, 1973, Ser. No. 383,620
Int. Cl. C10g *37/04*
U.S. Cl. 208—73 **11 Claims**



1. A process for the production of olefinically unsaturated hydrocarbons which comprises the steps of:

a. introducing a hydrocarbon feedstock comprising petroleum residuum into the catalytic cracking zone of a heavy oil cracking unit in the presence of fluidized cracking catalyst at cracking conditions to produce a catalytically cracked effluent including a cracked naphtha fraction;

b. regenerating said fluidized cracking catalyst in the regeneration zone of the heavy oil cracking unit;

c. producing high pressure steam in said regeneration zone by indirect heat exhange;

d. passing the cracked naphtha fraction to a thermal pyrolysis zone and thermally cracking said fraction to produce a thermally cracked effluent containing olefinically unsaturated hydrocarbons;

e. expanidng said high pressure steam from step (c) to provide at least part of the gas compression energy required for recovery of the olefinically unsaturated hydrocarbons; and

f. recovering olefinically unsaturated hydrocarbons.

8. An integrated process for the production of olefinically unsaturated hydrocarbons and aromatic compounds comprising the steps of:

a. introducing hydrocarbon feedstock containing petroleum residuum into the catalytic cracking zone of a heavy oil cracking unit in the presence of fluidized cracking catalyst at cracking conditions to produce catalytically cracked effluent including a cracked naphtha fraction;

b. passing the cracked naphtha fraction to a thermal pyrolysis zone at thermal cracking conditions to produce a thermally cracked effluent containing pyrolysis oil, olefinically unsaturated hydrocarbons and aromatic compounds;

c. separating pyrolysis oil from the thermally cracked effluent;

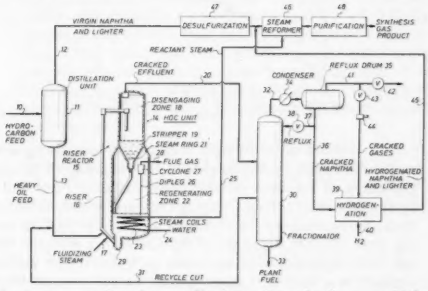
d. passing pyrolysis oil to the catalytic cracking zone of the heavy oil cracking unit; and

e. recovering olefinically unsaturated hydrocarbons and aromatic compounds.

3,862,899
PROCESS FOR THE PRODUCTION OF SYNTHESIS GAS AND CLEAN FUELS

James R. Murphy, and Leland W. Schneider, both of Houston, Tex., assignors to Pullman Incorporated, Chicago, Ill.

Filed Nov. 7, 1972, Ser. No. 304,508
Int. Cl. C10g *7/00*
U.S. Cl. 208—93 **18 Claims**



1. A process for the production of synthesis gas which comprises:

introducting a hydrocarbon feedstock into a catalytic cracking zone in the presence of fluidized cracking catalyst under severe fluid cracking conditions including at least 65 percent conversion of said hydrocarbon feedstock to produce an effluent;

fractionating said effluent to obtain a cracked naphtha fraction;

hydrogenating said cracked naptha fraction with hydrogen to saturate olefins and aromatics to produce a more saturated cracked naphtha fraction; and

introducing said more saturated cracked naphtha fraction and steam to a catalytic steam reforming unit to produce synthesis gas.

3,862,900
REMOVAL OF CHEMICALLY COMBINED CHLORINE AND OTHER IMPURITIES FROM HYDROCARBONS

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 9, 1973, Ser. No. 349,243
Int. Cl. C10g *25/04*
U.S. Cl. 208—262 **6 Claims**

1. A method for removing chemically combined chlorine from a hydrocarbon product mixture produced by the alkyla-

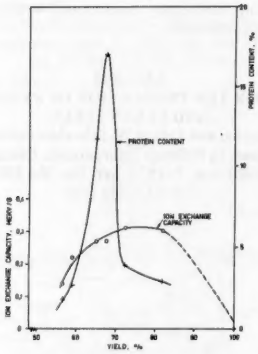
tion of an olefin with an isoparaffin in the presence of metal chloride catalyst, said mixture comprising chlorine containing compounds, by contacting said hydrocarbon mixture with an amount of zeolite molecular sieve having an effective pore size of about 7 to about 11 Angstrom units for a time sufficient, at ambient temperature, to adsorb said chemically combined chlorine onto said sieves.

3,862,901

METHOD OF RECOVERING ORGANIC MATERIAL FROM AQUEOUS SOLUTIONS THEREOF

Bengt Axel Wennerblom, Sundsvall, Sweden, and Sven Erik Jorgensen, Copenhagen, Denmark, assignors to Svenska Cellulosa Aktiebolaget, Sundsvall, Sweden

Filed Nov. 18, 1971, Ser. No. 200,159
Claims priority, application Sweden, Dec. 2, 1970, 16275/70
Int. Cl. C02b *1/50;* **C02c** *5/02*
U.S. Cl. 210—28 **4 Claims**



1. A method of purifying a waste water containing a high molecular organic compound with a basic group of the group consisting of proteins, polypeptides, bacteria, virus and enzymes, which comprises bringing the waste water, at a pH less than approximately 8, into contact with a sulphite pulp resulting from sulphite digestion of lignocellulosic material which has been sulphonated to an extent such that its ion exchange capacity is at least 0.15 mequ/gr and thereafter separating the so-treated water from said material.

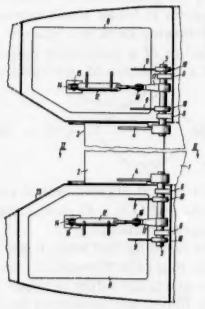
3,862,902

DEVICE FOR RECEIVING WATER SURFACE FLOATING IMPURITIES

Abram Yakovlevich Derzhavets, prospekt Gagarina, 4, kv. 5; Petr Grigorievich Kogan, ulitsa Perekopskoi divizii, 2, kv. 14, and Sergei Martynovich Nunuparov, ulitsa Lastochkina 5, kv. 34, all of Odessa, U.S.S.R.

Filed June 6, 1973, Ser. No. 367,396
Int. Cl. B01d *33/00*
U.S. Cl. 210—122 **4 Claims**

1. A device for receiving water surface floating impurities in the collecting receptacle of an oil and garbage skimmer craft, comprising: a gate installed at an inlet of the collecting receptacle and having an upper horizontal edge forming a weir, the upper layer of water together with flowing impurities being adapted to overflow the weir, said gate being located adjacent to the walls of said collecting receptacle; means supporting said gate for free rocking movement about a horizontal axis, said gate having an outer surface facing a water basin which is being cleaned, said surface comprising a portion of a cylinder having a longitudinal axis coextensive with the rocking axis of said gate; at least one float fastened for rocking movement about said horizontal gate rocking axis; a link forming a pivotal connection between said gate and said float, said link providing a rigid connection therebetween; a hydraulic cylinder having a hydraulic lock positioned in said link, said cylinder providing for variation and setting in the length of said link whereby the immersion depth of said upper horizontal edge of said gate can be controlled with respect to the water level in the water basin which is being cleaned.



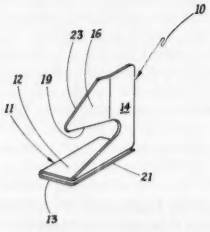
4. A device as claimed in claim **1**, said gate being located in an open-bottomed enclosure, said enclosure protecting said float against hydrodynamic effects caused by surrounding water of said basin.

3,862,903

UNIT FILTER RETAINING MEANS

Allan R. Getzin, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed May 14, 1973, Ser. No. 360,135
Int. Cl. B01d *27/08*
U.S. Cl. 210—232 **5 Claims**



1. A unit filter retaining apparatus adapted to be received in a flow-through housing comprising:

a U-shaped body portion, one leg of said body portion being a resilient, inclined wing portion constructed to abut and urge the frame of a unit filter toward said flow-through housing and into sealing relationship when positioned in said flow-through housing; and,

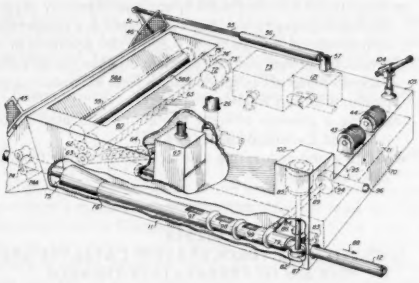
the other leg being an elongate channel portion having first and second essentially spaced parallel legs, said channel portion being adapted to receive an edge of said flow-through housing thereby attaching said retaining apparatus to said housing.

3,862,904

BOAT FOR COLLECTING OIL SLICKS AND OTHER CONTAMINANTS FROM THE SURFACE OF WATER

Danny J. Weatherford, 7250 North 41st. Ave., Phoenix, Ariz. 85021

Filed Jan. 21, 1974, Ser. No. 435,103
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 13 Claims



1. A boat for collecting oil slicks and other contaminants from the surface of the water comprising:

a hull having a bow and a stern,

a fluid receiving compartment arranged in the bottom of said hull,

a sluice gate formed in the bow of the boat for selectively admitting surface water only into said receiving compartment,

an oil collecting boom comprising a plurality of elongated flexible interconnected members floatable on water.

said boom being connected at one end to one side of said bow on one side of said sluice gate and having its other end fed through an aperture in the hull of the boat on the other side of said sluice gate, said apertures being arranged longitudinally of said hull,

means for moving said boom through the apertures in said hull to cause the surface of the water within the loop formed by said boom to be moved into said sluice gate and said fluid receiving compartment, and

pump means connected to said compartment for removing fluid therefrom.

3,862,905

WASHING AGENTS CONTAINING AN AMINOCARBONAMIDE TEXTILE SOFTENER AND PROCESS OF WASHING AND SOFTENING TEXTILES

Hans-Werner Eckert, Dusseldorf, Germany, assignor to Henkel & Cie GmbH, Dusseldorf, Germany

Filed Feb. 26, 1973, Ser. No. 335,757
Claims priority, application Germany, Mar. 12, 1972, 2213557
Int. Cl. C11d *3/065, 3/32, 1/12*
U.S. Cl. 252—98 15 Claims

1. A one-step process for the washing and softening of textiles which consists essentially of immersing soiled textiles in an aqueous softening washing liquor bath at temperatures of from 20°C to 100°C for a time sufficient to clean and soften said textiles and recovering said cleaned and softened textiles, said aqueous, softening washing liquor bath containing

1. from 0.15 to 0.5 gm/liter of a tenside component consisting of from 20 to 100% by weight of said tenside component of anionic surface-active sulfonates and sulfates with from 8 to 18 carbon atoms in the hydrophobic moiety, from 0 to 80% by weight of said tenside component of soaps and from 0 to 45% by weight of said tenside component of non-ionic surface-active compounds;

2. from 0.05 to 0.4 gm/liter of a softener component aminocarbonamide of the formula

$$R - NH - A - CONH_2$$

wherein R is a member selected from the group consisting of alkyl having 10 to 24 carbon atoms, alkenyl having 10 to 24 carbon atoms, alkadienyl having 10 to 24 carbon atoms and A is a divalent linkage selected from the group consisting of methylene, ethylene and ethylidene;

3. from 0.6 to 2.0 gm/liter of at least one conventional builder salt wherein sufficient alkaline-reacting builder salts are present whereby the pH of said washing liquor bath is 7 or over;

with the proviso that the amount of said tenside component is at least as large as the amount of said softener component.

3,862,906

COMPOSITION FOR CLEANING HANDS AND OTHER PARTS OF THE BODY

Maurice Chambon, Genis-Laval, and Jean Neel, Lyon, both of France, assignors to Progil, Paris, France

Filed Dec. 21, 1971, Ser. No. 210,570
Int. Cl. C11d *9/30, 15/04, 9/32*
U.S. Cl. 252—117 4 Claims

1. A composition for cleaning the hands or other parts of the body without the utilization of additional water, consisting essentially of:

1. a polymer or copolymer, hydrophilic and insoluble in water, in the form of an aqueous emulsion containing an anionic or non-ionic emulsifying agent in a quantity approximately equal to the critical micelle concentration sufficient to give stability to said polymer or copolymer emulsion during storage but low strength with regard to the breaking of the emulsion under mechanical shearing action, said polymer or copolymer constituting 8–54% by weight of said composition, and which polymer or copolymer forms water and stain absorbing aggregates upon coagulation, said polymer or copolymer being based on at least one monomer selected from the group consisting of acryl and methacryl esters of methyl, ethyl and butyl and acrylonitrile;

2. 2–10% by weight of at least one fat emulsive soap selected from the group consisting of fatty acid salts of alkali metals or amines and mixtures thereof, wherein the total amount of components other than water in the composition is 20–60% by weight; and

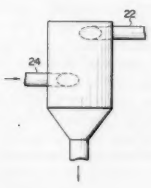
3. 40–80% by weight water.

3,862,907

METHOD FOR RAPIDLY MIXING DIFFERENT KINDS OF GAS

Teruo Shimotsuma; Kazuo Sano, and Yutaka Fukuda, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 18, 1972, Ser. No. 316,012
Claims priority, application Japan, Dec. 22, 1971, 46-104297
Int. Cl. B01f *3/02*
U.S. Cl. 252—188 2 Claims



1. A method for rapidly mixing at least two different kinds of gases which comprises introducing a first gas into the upper

part of a cyclone-type gas mixing chamber having a longitudinal axis through an upper gas inlet pipe disposed in a tangential direction to the periphery of said chamber; and simultaneously introducing a second gas having a lower density than said first gas into the lower part of said mixing chamber through a lower gas inlet pipe disposed in a tangential direction to said periphery and in an opposite gas swirling direction to that of said first gas, both gases swirling vortically about said longitudinal axis, the vertical distance between said gas inlets being from 1.5 to 3.0 times the diameter of said upper gas inlet pipe; said second gas entering said mixing chamber at a linear velocity 1.15 to 20.0 times that at which said first gas enters said mixing chamber; said first gas supplied to the mixing chamber through the upper gas inlet pipe having a vortical flow at a swirling linear velocity 1.0 to 3.5 times the vertical velocity at which said gas is gradually brought downward while spirally flowing; whereby said gases are mixed, and withdrawing said mixed gas through an outlet positioned in said mixing chamber below said lower gas inlet pipe.

3,862,908

MICROSPHERES OF URANIA AND OTHER MATERIALS

Frederick T. Fitch, Shaker Heights, Ohio, and Ann B. Braun, Rockville, Md., assignors to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 192,088, May 3, 1962, abandoned, and a continuation-in-part of Ser. No. 305,828, Aug. 20, 1963, abandoned. This application May 3, 1967, Ser. No. 635,662

Int. Cl. C01q *56/00*

U.S. Cl. 252—301.1 S **10 Claims**

1. As compositions of matter dense sintered, microspheres of:

a. actinide oxides,
b. mixtures of actinide oxides,
c. ceramic oxides other than the actinides, and
d. mixtures of actinide oxides with ceramic oxides,

said particles consisting essentially of dried colloidal residues, having a diameter of 5 to 500 microns, a uniform crystallite structure with a grain size of 1 micron or less, and a sigma value derived from the equation Sigma = D/D_s of about 1 to 1.3.

3,862,909

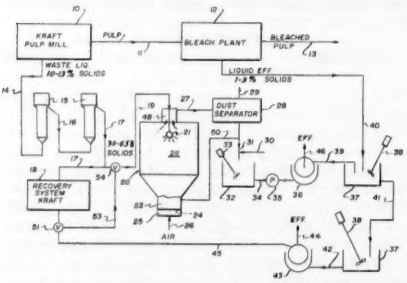
FLUIDIZED BED AUTOGENOUS COMBUSTION AND PYROLYSIS OF AQUEOUS EFFLUENTS TO PREPARE ACTIVATED CARBON

George G. Copeland, Western Springs, Ill., assignor to Copeland Systems Incorporated, Oak Brook, Ill.

Filed Sept. 5, 1972, Ser. No. 286,604

Int. Cl. C01b *31/08*

U.S. Cl. 252—421 **3 Claims**



1. A method for treating aqueous wastes containing organic carbonaceous materials, said method comprising:

introducing an aqueous waste containing organic carbonaceous materials by spraying into the freeboard space of a fluid bed reactor having a particle bed and a freeboard space thereabove wherein the particles of said bed are fluidized by a gas containing oxygen in such stoichiometric amount as is necessary for autogenous incomplete combustion of the organic carbonaceous materials in said waste at temperatures of from about 900° to about 2,000°F.;

maintaining in said freeboard space a substantially oxygen-free atmosphere comprising water vapor at a temperature of from about 900° to about 1,200°F. for pyrolysis of the products derived from incomplete combustion of carbonaceous materials in said waste to form activated carbon products in said freeboard space;

removing a gaseous effluent containing activated carbon from said freeboard space; and

separating and recovering said activated carbon from the gaseous effluent.

3,862,910

OXIDATIVE DEHYDROGENATION CATALYST AND PROCESS OF PREPARATION THEREOF

Robert S. Cichowski, San Luis Obispo, Calif., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 109,010, Jan. 22, 1971, Pat. No. 3,766,191. This application July 20, 1973, Ser. No. 381,019

Int. Cl. B01j *11/82*

U.S. Cl. 252—435 **9 Claims**

1. A method of preparing a catalyst comprising the following process sequence:

a. contacting a potassium compound and an iron compound in the absence of phosphorus;
b. calcining the resulting potassium/iron mixture;
c. contacting the thus calcined potassium/iron mixture with a phosphorus compound; and
d. calcining the resulting potassium/iron/phosphorus mixture; said potassium, iron and phosphorus compounds being the oxides or compounds convertible to the oxides on calcination.

6. A catalyst composite which consists essentially of potassium, iron, phosphorus, and oxygen, and which is prepared by the sequential steps of:

a. contacting, in the absence of phosphorus, a potassium compound with an iron compound;
b. calcining the thus-contacted potassium compound and iron compound at a temperature within the range of about 1,600°F to about 2,000°F for a period of time in the range of about 0.1 to about 30 hours;
c. admixing the thus-calcined composition containing potassium and iron with a phosphorus-containing compound; and
d. calcining the resulting admixture containing potassium, iron and phosphorus at a temperature within the range of about 800°F to about 1,400°F for a period of time in the range of about 1 to about 25 hours;

said potassium, iron, and phosphorus compounds being the oxides or compounds convertible to the oxides on calcination.

3,862,911

CATALYST BASED ON RANEY NICKEL CONTAINING IRON

Henri Chabert, Villeurbanne, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Dec. 12, 1972, Ser. No. 314,434

Claims priority, application France, Dec. 13, 1971, 71.44626

Int. Cl. B01j *11/22*

U.S. Cl. 252—470 **6 Claims**

1. A hydrogenation catalyst obtained by treating with a base a powdered Raney alloy consisting essentially of:

nickel 30 – 38% by weight
chromium 0.2 – 1.8% by weight
iron [1.5 -5%] 1.5 – 4% by weight
the remainder being aluminium.

3,862,912

PROCESS FOR PRODUCING MEDIUM-TO COARSE-CELL RIGID PHENOLIC RESIN FOAMS OF IMPROVED ABRASION WEAR

Heinz Berndt, Eick-Ost; Dragomir Simic, Mulheim-Ruhr, and Heinz-Ulrich Zupancic, Duisburg, all of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Filed May 31, 1974, Ser. No. 475,000

Claims priority, application Germany, June 30, 1973, 23334692

Int. Cl. C08g *53/10*

U.S. Cl. 260—2.5 F **6 Claims**

1. Process for the production of rigid phenolic resin foams of medium- to coarse-cell structure and of improved abrasion wear from a mixture of a phenol-formaldehyde resin solution, a hardener and a foaming agent, comprising adding prior to foaming said mixture, an additive comprising 5 to 30 % of dispersed solids, based on the solids content of the phenolic resin solution, of an aqueous dispersion of a copolymer comprising (a) 50 to 90 parts by weight of a fumaric acid diester of tertiary and/or secondary aliphatic alcohols having 3–6 carbon atoms, (b) zero to 10 parts by weight of a monoolefin monomer having 2 to 8 carbon atoms, (c) 3 to 25 parts by weight of a vinyl aromatic monomer, (d) and 5 to 20 parts by weight of a fumaric acid diester of a primary aliphatic alcohol having 4 to 8 carbon atoms.

3,862,913

POLYMERIZATION PROCESS

Alan Charles Sturt, Guildford, England, assignor to BP Chemicals Limited, London, England

Continuation of Ser. No. 179,212, Sept. 9, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 389,665

Claims priority, application Great Britain, Sept. 30, 1970, 46602/70

Int. Cl. C08f *1/13*

U.S. Cl. 260—17 R **4 Claims**

1. In a process for the polymerization of a rubber reinforced polymer by mixing the latex with monomeric material selected from the group consisting of styrene, a styrene-acrylonitrile mixture, and a styrene-methyl methacrylate mixture, causing the rubber particles protected by means of a colloid to pass into the monomeric material by destroying the stability of the rubber latex, and polymerizing the monomeric suspension in water, the improvement which comprises mixing the latex and the monomeric material in the presence of a protective colloid which is a water-soluble cellulose compound and stabilizing the suspension of monomeric material during the polymerization by the addition, subsequent to causing the rubber particles to pass into the monomeric material, of a suspension stabilizer.

3,862,914

WATER-BASED COATINGS FROM POLYEPOXIDES AND POLYCARBOXYLIC ACID MONOANHYDRIDES

Ronald W. Anderson, Pittsburgh, and Richard C. McAfee, Wexford, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,708

Int. Cl. B32b *15/08*, *27/00*; **C08g** *30/12*

U.S. Cl. 260—29.2 EP **17 Claims**

1. A method of producing a non-gelled acidic resin from an hydroxy functional resinous polyepoxide having an alcoholic hydroxyl value of at least about 0.1 equivalents per 100 grams and a tricarboxylic acid monoanhydride, comprising heat reacting said polyepoxide having a 1,2-epoxy functionality of from about 1.4 to about 2 with said anhydride in organic solvent solution having a solids content in the range of from about 50 to about 85%, said solvent being water miscible and inert with respect to the reactants, said heat reaction being carried out at a temperature of from about 100° C. to about 125° C. in the absence of a basic catalyst and said anhydride being present in an amount of from about 2 to about 35 parts by weight per 100 parts of said polyepoxide to provide an acidic resin having an acid number of at least about 10 and an epoxy value in the range of 0.02–0.07 equivalents per 100 grams, said tricarboxylic monoanhydride and said polyepoxide reacting to produce a gel at temperatures above about 125° C. and producing undesired gelation at the temperature range specified when the concentration is above about 85%.

3,862,915

PROCESS FOR AQUEOUS POLYMERIZATION OF N-VINYLPYRROLIDONE UTILIZING FINELY DIVIDED SUSPENSION OF WATER INSOLUBLE CATALYST

Michael Fried, Heidelberg; Rolf Moeller, Ludwigshafen; Ludwig Zuern, Bad Duerkheim, and Erhard Stahnecker, Ziegelhausen, all of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed Apr. 5, 1973, Ser. No. 348,181

Claims priority, application Germany, Apr. 19, 1972, 2218935

Int. Cl. C08f *7/14*, *1/08*, *19/00*

U.S. Cl. 260—29.6 HN **7 Claims**

1. In a process for the production of an aqueous solution of an N-vinylpyrrolidone polymer b y polymerizing as the monomer

a. from 70 to 100 percent by weight of N-vinylpyrrolidone and

b. up to 30 percent by weight, based on the total monomer amount, of at least one other monoolefinically unsaturated monomer selected from the group consisting of acrylic acid, acrylamide, methacrylamide, acrylonitrile, methyl acrylate and vinyl acetate, in an aqueous solution at a temperature of from 60° to 150°C. and in the presence of a water-insoluble polymerization catalyst forming free radicals, the improvement which comprises supplying to said aqueous solution of the monomer in a plurality of portions or continuously from 0.01 to 3 percent by weight, based on the total monomer amount of said water-insoluble polymerization catalyst in the form of a finely divided 0.5 to 50 percent by weight suspension in an aqueous 0.5 to 30 percent by weight solution of an N-vinylpyrrolidone polymer having a K value in aqueous solution of from 60 to 150.

3,862,916

SOLUTIONS OF POLYVINYL ACETALS WITH PHENOLIC ANTIOXIDANT IN PREPARATION FOR RESTORING AND/OR PRESERVING PAPERS

Curtis B. Hayworth, Morristown, N.J., assignor to World Patent Development Corp., New York, N.Y.

Filed Feb. 5, 1973, Ser. No. 329,306

Int. Cl. C08f *29/26*, *45/24*

U.S. Cl. 260—29.6 ME **4 Claims**

1. A composition for restoring and preserving papers consisting of a solution of a phenolic antioxidant and a polyvinyl acetal, the amount of the antioxidant being from about 0.1 to 1 percent by weight based on the weight of said acetal in a solvent mixture consisting of a chlorinated hydrocarbon containing 2 carbon atoms and a solvent selected from a group consisting of isopropanol, methyl isobutyl ketone and mixtures of isopropanol and methyl isobutyl ketone, to which solution has been added a solution in a water-miscible alcohol of a basic agent dissolved in water or of a hydrated basic agent, said polyvinyl acetal consisting in percent by weight of about 15–25 percent vinyl alcohol, 1–3 percent vinyl acetate and 70–82 percent of vinyl alcohol units acetalized with one or more aldehydes selected from the group consisting of formaldehyde, acetaldehyde. and butyraldehyde.

3,862,917

PRESSURE SENSITIVE ADHESIVE OF POLYALKENAMEN AND COUMARONE RESIN IN ORGANIC SOLVENT

Rudolf Hombach, Cologne-Flittard, and Dieter Theisen, Remscheid, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 243,415, Apr. 12, 1972, Pat. No. 3,763,067. This application Apr. 2, 1973, Ser. No. 346,929

Claims priority, application Germany, Apr. 14, 1971, 2118020

Int. Cl. C08f *31/04, 45/28, 45/30*

U.S. Cl. 260—33.6 A 10 Claims

1. An adhesive composition consisting essentially of at least one polyalkenamer dissolved in an inert organic solvent and 10 to 250% by weight, based on the polyalkenamer, of a coumarone resin.

3,862,918

MOULDABLE COMPOSITIONS FOR ARTICLES WHICH ARE RESISTANT TO SHOCK AND TO WEAR AT HIGH TEMPERATURE

Serge Laurent, Bron, and Maurice Mallet, Lyon, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Sept. 11, 1973, Ser. No. 396,147

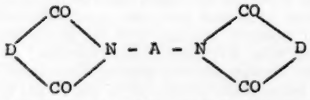
Claims priority, application France, May 26, 1971, 71.19102; Aug. 2, 1971, 71.28245

Int. Cl. C08g *51/10*

U.S. Cl. 260—37 N 7 Claims

1. A prepolymer moulding composition which comprises, by weight:

a. about 10 to 70% of a prepolymer binder obtained from a bis-imide of an unsaturated dicarboxylic acid of the general formula:



in which D represents a divalent organic radical containing a carbon-carbon double bond and A represents a divalent organic radical possessing two to 30 carbon atoms, and from a polyamine of the formula:

$$R(NH_2)_x$$

in which x is an integer of at least 2 and R represents an organic radical of valency x, about 0.55 to 25 mols of bis-imide being used per molar NH_2 group supplied by the polyamine;

b. about 5 to 30% of polytrimellamide-imide fibres, the fibres being between 1 and 10 mm long; and

c. about 20 to 70% of fillers selected from particles of graphite, molybdenum disulphide, lead, bronze or fluorinated polymers and asbestos fibres.

3,862,919

ORGANOPOLYSILOXANE COMPOSITIONS HAVING RESILIENT PROPERTIES

Siegfried Nitzsche; Paul Hittmair; Wolfgang Hechtl; Ernst Wohlfarth, and Manfred Mittermeier, all of Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

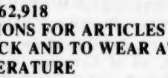
Filed Dec. 5, 1973, Ser. No. 421,892

Claims priority, application Germany, Dec. 6, 1972, 2259802

Int. Cl. C08f *19/14*

U.S. Cl. 260—18 S 11 Claims

1. A composition having a high degree of elasticity under suddenly applied stress comprising an organopolysiloxane containing condensible groups and having diorganosiloxane units and a small amount of siloxane units or silanes whose functionality is greater than the functionality of the diorganopolysiloxane units, said silanes are represented by the formula $R_aSiX'_{4-a}$ and said siloxane units are selected from units of the formula $RSiO_{3/2}$ and $SiO_{4/2}$ units in which these siloxane units can be substituted by units of the formula



R is selected from the class consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals and cyanoalkyl radicals, R′ is a divalent hydrocarbon radical, X′ is a hydrolyzable group and a is 0 or 1, and a condensation catalyst in an amount of from 0.1 to 15 percent by weight based on the weight of the organopolysiloxane, said catalyst is obtained from the reaction of a dialkyldialkoxysilane and a tin carboxylate at a temperature of from 50° to 200°C.

3,862,920

DENTAL FILLING MATERIALS

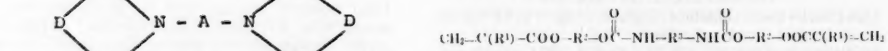
John Foster, Sheerness, and Richard John Walker, Harpenden, both of England, assignors to The Amalgamated Dental Company Limited, London, England

Continuation-in-part of Ser. No. 341,106, March 14, 1973, Pat. No. 3,825,518. This application Mar. 29, 1974, Ser. No. 456,376

Int. Cl. C08f *1/84, 45/04;* A61k *5/02*

U.S. Cl. 260—42.52 6 Claims

1. A composite dental filling material comprising a mixture of from 70 to 80 percent by weight of a finely divided, inert inorganic filler; and from 30 to 20 percent by weight of a polymeric mixture A, said polymeric mixture A comprising from 30 to 70 percent by weight of the reaction product of an organic aliphatic diisocyanate and the hydroxyalkyl acrylate or methacrylate having the formula:-



wherein R^1 is a hydrogen atom or a methyl group, R^2 is an alkylene group, and R^3 is a divalent aliphatic hydrocarbon radical; and from 70 to 30 percent by weight of a bisphenol A derivative having at least two terminal acrylate or methacrylate ester groups.

3,862,921

PROCESS FOR THE PRODUCTION OF POLYMER

John David Webster, and Thomas John Jewell, both of Cornwall, England, assignors to English Clays Lovering Pochin & Company Limited, Cornwall, England

Filed Sept. 7, 1973, Ser. No. 395,166

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 AA 14 Claims

1. A process for the production of a polymer from a prepolymer and a curing agent therefor, the process comprising:

a. heating the prepolymer to a temperature in the range in which the curing agent reacts with the prepolymer in liquid form to cure the latter;

b. degassing the prepolymer;

c. transferring the heated and degassed prepolymer to a first storage tank which is maintained at a substantially constant temperature within the said range;

d. providing the curing agent in liquid form at a temperature at which it is capable of curing the prepolymer and below that at which the curing agent deteriorates;

e. storing the liquid curing agent in a second storage tank which is maintained at a substantially constant temperature below that at which the curing agent deteriorates;

f. transferring the heated prepolymer and the liquid curing agent continuously in recycling circuits from the first and second storage tanks respectively to discrete ducts in a mixing head and back to the respective storage tanks, the mixing head being operable continuously or intermit-

tently, as required, to mix and then discharge the mixture of prepolymer and curing agent.

3,862,922

PROCESS FOR THE PREPARATION OF ORGANIC DITHIOL POLYSULFIDES

Jean-Baptiste Signouret, Billere; Yves Labat, Pau, and Christian Esclamadon, Billere, all of France, assignors to Societe Nationale des Petroles D'Aquitaine, Courbevoie, France

Continuation-in-part of Ser. No. 199,321, Nov. 16, 1971, abandoned. This application Sept. 12, 1973, Ser. No. 396,444

Claims priority, application France, Nov. 20, 1970, 70.41789

Int. Cl. C08g *23/00*

U.S. Cl. 260—79 **5 Claims**

1. A process for the preparation of dithiol polysulfides having a molecular weight of between 500 and 10,000 comprising reacting simultaneously an aqueous solution of sodium, potassium or ammonia polysulfide with a compound of the formula X—R—X, wherein R is selected from the group consisting of alkyl of 1 to 12 carbon atoms, and oxygen or sulfur substituted alkyl and X is halogen, there being present 1.1 to 1.5 moles of said polysulfide per mole of said dihalogenated compound, introducing at the same time 1.2 to 1.6 moles of hydrogen sulfide per mole of said polysulfide into the reaction mixture so formed, the process being conducted at a temperature range from about 80°C to about 120°C.

3,862,923

OLIGOMER COMPOSITION AND PRODUCTS MADE THEREFROM

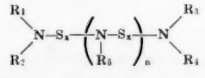
Kyung S. Shim, Dobbs Ferry, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 120,731, March 3, 1971, Pat. No. 3,725,481, which is a continuation of Ser. No. 800,711, Feb. 19, 1969, abandoned. This application Sept. 25, 1972, Ser. No. 291,855

Int. Cl. C08f *27/06*

U.S. Cl. 260—79.5 C **6 Claims**

1. A vulcanized product obtained by heating a rubber composition selected from the group consisting of alpha-olefin hydrocarbon synthetic rubbers and natural rubber and mixtures thereof in the presence of an effective amount for vulcanization of a curing agent consisting of an oligomer composition having the following formula:



wherein R_1, R_2, R_3, and R_4 each are a lower alkyl group having from 1 to 10 carbon atoms, R_5 is a tertiary butyl group, x ranges between 1 and 7, and n ranges between 0.5 and 15.

3,862,924

SUSPENSION POLYMERIZATION IN BRINE OF UNIFORM SPHERICAL POLYMER BEADS

Herman C. Hamann, Melrose Park, and William Stellwagen, Jr., Trevose, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 7, 1973, Ser. No. 413,487

Int. Cl. C08f *3/22, 7/14, 29/10*

U.S. Cl. 260—88.1 PA **2 Claims**

1. In the suspension polymerization of one or more water soluble ethylenically unsaturated monomers suspended in an aqueous medium having a high salt content, the improvement comprises preparing uniformly sized and spherical beads by carrying out the polymerization in the presence of a dispersion system comprising:

1. from about 0.05% to 0.5% by weight of water present of a high molecular weight Xanthan gum dispersant and
2. from about 0.007% to 0.02% of a hydroxy(C_1-C_4)alkylmethyl cellulose surface and interfacial modifier.

3,862,925

PREPARATION OF SOMATOTROPIN RELEASE INHIBITING FACTOR AND INTERMEDIATES THEREFOR

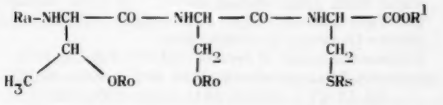
Dimitrios Sarantakis, Audubon, and Wayne A. McKinley, Wallingford, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed July 5, 1973, Ser. No. 376,472

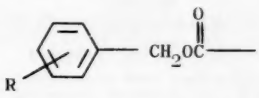
Int. Cl. C07c *103/52;* **C07g** *7/00;* **A61k** *27/00*

U.S. Cl. 260—112.5 **31 Claims**

1.



in which Ra is a member selected from the group consisting of tertiary-butyloxycarbonyl, tertiary-amyloxycarbonyl, trityl, phthalyl, tosyl, allyloxycarbonyl, cyclopentyloxycarbonyl, 2-(p-biphenylyl) isopropoxycarbonyl, diphenylmethyloxycarbonyl, ortho, para or 2,4-dinitrophenylsulfenyl, and



wherein R is hydrogen, halo, lower alkoxy or nitro;

Ro is a member selected from the group consisting of hydrogen, acetyl, tosyl, benzoyl, tertiary butyl, trityl, benzyl, and p-methoxybenzyl radicals;

Rs is a member selected from the group consisting of benzoyl, trityl, benzyl, p-methoxybenzyl, benzyloxycarbonyl, p-nitrobenzyl, acetamidomethyl, diphenylmethyl or nuclear substituted diphenylmethyl in which the substituents are alkoxy of 1 to 6 carbon atoms, chloro, iodo, or bromo radicals; and

R^1 is a member selected from the group consisting of hydrogen, lower alkyl, diphenylmethyl, benzyl, p-nitrobenzyl, p-methoxybenzyl, 2,4-dimethoxybenzyl, 2,4,6-trimethylbenzyl, pentamethylbenzyl, phenacyl, phthalimidomethyl, beta-methylthioethyl, 4-picolyl and 4-(methylthio)phenyl.

3,862,926

SIMPLIFIED METHOD FOR THE MANUFACTURE OF THE THYROTROPIN RELEASE HORMONE

George Rogelio Fluoret, Deerfield, Ill., assignor to Abbott Laboratories, Chicago, Ill.

Continuation-in-part of Ser. No. 61,790, Aug. 6, 1970, abandoned. This application Apr. 2, 1973, Ser. No. 345,029

Int. Cl. C07c *103/52;* **C07g** *7/00*

U.S. Cl. 260—112.5 **6 Claims**

1. The process of making L-pyroglutamyl-L-histidyl-L-proline amide consisting essentially in reacting a solution of an active ester of L-pyroglutamic acid in an inert, polar, organic solvent with an aqueous solution of 0.75–1.0 molar equivalents of L-histidine and 1-2 equimolar amounts of an alkali hydroxide at a temperature of between 0° and 40° C. for a period of between 5 minutes and 5 hours; adding at least one molar equivalent of L-proline amide hydrochloride and sufficient hydrochloric acid to adjust the pH to between 6.0 and 6.5 at a temperature of between 0° C. and room temperature

and, after dissolution of said amide, adding 1-2 molar equivalents of an epimerization inhibitor, cooling the mixture under agitation to 0° C., adding at least one molar equivalent of a solution of dicyclohexylcarbodiimide in an inert, organic, polar solvent, and stirring the mixture at a temperature of between −10° and +10° C. for a period of at least 10 hours.

3,862,927

PROCESS FOR PREPARATION OF VASOACTIVE INTESTINAL PEPTIDE

Sami I. Said, Dept. of Internal Medicine, The Univ. of Texas Southwestern Medical School, 5323 Harry Hines Blvd., Dallas, Tex. 75235; Miklos Bodanszky, Dept. of Chemistry, Case Western Reserve University, Cleveland, Ohio 44106; Viktor Mutt, Jungfrudansen 18[II], 171 55 Solna, Sweden, and Yakir Klausner, Dept. of Biological Chemistry, The Hebrew University, Jerusalem, Israel

Continuation-in-part of Ser. No. 335,976, Feb. 26, 1973, abandoned. This application Sept. 28, 1973, Ser. No. 401,624

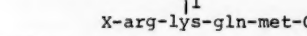
Int. Cl. C07c *103/52;* **A61k** *27/00;* **C07o** *7/00*

U.S. Cl. 260—112.5 **32 Claims**

1. A method for the preparation of Vasoactive Intestinal Peptide of the sequence:

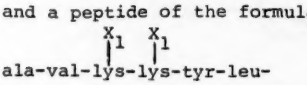
his-ser-asp-ala-val-phe-thr-asp-asn-tyr-thr-arg-leu-arg-lys-gln-met-ala-val-lys-lys-tyr-leu-asn-ser-ile-leu-asn-NH_2

which comprises coupling by peptide linkages a peptide of the formula:



X-arg-lys-gln-met-COY

and a peptide of the formula:

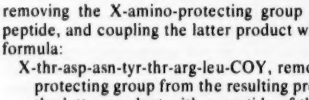


ala-val-lys-lys-tyr-leu-asn-ser-ile-leu-asn-NH_2,

removing the X-amino-protecting group from the resulting peptide, and coupling the latter product with a peptide of the formula:

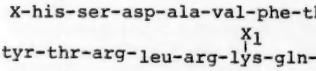
X-thr-asp-asn-tyr-thr-arg-leu-COY, removing the X-amino-protecting group from the resulting product and coupling the latter product with a peptide of the formula:

X-his-ser-asp-ala-val-phe-COY to produce a peptide of the sequence:



X-his-ser-asp-ala-val-phe-thr-asp-asn-tyr-thr-arg-leu-arg-lys-gln-met-ala-val-lys-lys-tyr-leu-asn-ser-ile-leu-asn-NH_2,

and removing the X and X_1 protecting groups from the latter peptide; wherein all amino acids are in the L-form, Y is a carboxyl activating group, and wherein X and X_1 are groups selected from those of the formula:



(1) R-O-C-

where R is a straight or branched chained alkyl of 1 to 10 carbon atoms; aryl of 6 to 15 carbon atoms which may be substituted by one or more halogens, nitro, lower alkoxy, or lower alkyl groups; cycloalkyl of 5 to 8 carbon atoms; aralkyl of 7 to 18 carbon atoms which may contain one or more alkyl groups of 1 to about four carbon atoms; alkaryl of 7 to 18 atoms which may contain one or more alkyl groups of 1 to about four carbon atoms; vinyl; isonicotinyl; or adamantyl; (2) phthaloyl; (3) paratoluenesulfonyl; and (4) formyl; and wherein the X amino-protecting group is removable by methods which will not substantially affect the X_1 amino-protecting group.

3,862,928

PSYCHOPHARMACOLOGICAL HEXA-PEPTIDES CONTAINING A D-PHENYLALANYL RESIDUE

David De Wied, Bilthoven, and Hendrik Marie Greven, Heesch, both of Netherlands, assignors to Akzona Incorporated, Ashville, N.C.

Continuation-in-part of Ser. No. 840,518, July 9, 1969, abandoned. This application Aug. 28, 1972, Ser. No. 284,083

Int. Cl. C07c *103/52;* **C07g** *7/00;* **A61k** *17/06*

U.S. Cl. 260—112.5 **4 Claims**

1. A peptide of the formula:

X-L-MET-A-L-His-D-Phe-B-L-Trp-OH,

in which X is selected from the group consisting of hydrogen, H-L-Ser and H-Gly, A is selected from the group consisting of L-Glu and L-Gln and B is selected from the group consisting of L-Arg and L-Lys, and a derivative thereof selected from the group consisting of a pharmaceutically acceptable acid addition salt, a C-terminal unsubstituted amide, an alkyl-substituted amide, the alkyl group of which contains 1–6 carbon atoms, a C-terminal ester derived from an aliphatic or phenylaliphatic alcohol with 1–18 carbon atoms, and a complex of a metal selected from the group consisting of zinc, copper, nickel, cobalt and iron.

3,862,929

HETEROCYCLIC BASIC PHENYLAZOPHENYL DYES CONTAINING A QUATERNIZED AMINOALKYLENECARBOXAMIDE

Roland Entschel, and Willy Steinemann, both of Basel, Switzerland, assignors to Fidelity Union Trust Company

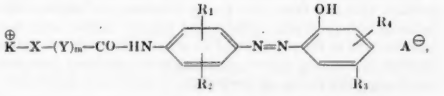
Division of Ser. No. 743,037, July 8, 1968, Pat. No. 3,674,772. This application July 3, 1972, Ser. No. 268,842

Claims priority, application Switzerland, July 25, 1967, 10548/67; Aug. 29, 1967, 1225/67

Int. Cl. C09b *29/26;* **c09b** *43/12*

U.S. Cl. 260—156 **11 Claims**

1. A compound of the formula

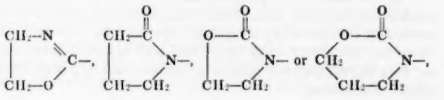


wherein

R_1 is hydrogen, lower alkyl, lower alkyl monosubstituted by hydroxy, halo, cyano or phenyl, lower alkoxy, halo, nitro, lower alkylsulfonyl, phenylsulfonyl, trifluoromethyl or sulfamoyl,

R_2 is hydrogen, lower alkyl, lower alkyl monosubstituted by hydroxy, halo, cyano or phenyl, lower alkoxy or halo,

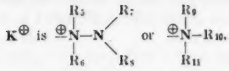
R_3 is hydrogen, halo, alkyl of 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms monosubstituted by hydroxy, halo, cyano or phenyl, alkoxy of 1 to 6 carbon atoms, cyano, lower alkylsulfonyl, phenylsulfonyl, acetamido, benzamido, ethoxycarbonylamino, N,N-dilower alkylsulfamoyl,



R_4 is hydrogen, halo, alkyl of 1 to 6 carbon atoms or alkyl of 1 to 6 carbon atoms monosubstituted by hydroxy, halo, cyano or phenyl X is straight or branched chain alkylene of 1 to 6 carbon atoms or straight or branched chain alkylene of 1 to 6 carbon atoms monosubstituted by hydroxy,

Y is phenylene, methylphenylene, naphthylene or tetrahydronaphthylene,

m is 0 or 1,



wherein

each of R_5 and R_6 is independently alkyl of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms monosubstituted by hydroxy, halo, cyano or phenyl or cyclohexyl,

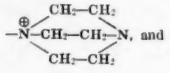
each of R_7 and R_8 is independently hydrogen, alkyl of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms monosubstituted by hydroxy, halo, cyano or phenyl or cyclohexyl, or R_5 and R_6 taken together and with the nitrogen atom to which they are joined are pyrrolidinium, piperazinium, morpholinium, aziridinium or piperidinium, or

R_5 and R_7 taken together and with the nitrogen atoms to which they are joined are pyrazolidinium, pyridazinium or pyrazolinium, or

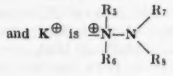
R_5, R_6, R_7 and R_8 taken together and with the nitrogen atoms to which they are joined are trimethylenepyrazolidinium or tetramethylenepyrazolidinium,

each of R_9, R_{10} and R_{11} is independently alkyl of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms monosubstituted by hydroxy, halo, cyano or phenyl or cyclohexyl, or R_9 and R_{10} taken together and with the nitrogen atom to which they are joined are pyrrolidinium, piperidinium, morpholinium, aziridinium or piperazinium, or

R_9, R_{10} and R_{11} taken together and with the nitrogen atom to which they are joined are pyridinium, methylpyridinium, quininolinium or



and A^- is an anion, with the provisos that (1) at least one of K^+ and R_3 is heterocyclic, (2) when m is O, R_1 is other than hydrogen



pyridinium, methylpyridinium or quinolinium, and (3) each halo is independently chloro or bromo.

3,862,930

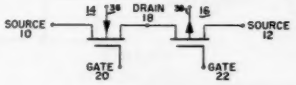
RADIATION-HARDENED CMOS DEVICES AND CIRCUITS

Harold L. Hughes, Hillcrest Heights, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 22, 1972, Ser. No. 282,811

Int. Cl. H01j *7/00, 1/13*

U.S. Cl. 117—201 **5 Claims**



1. A method of radiation hardening a Complementary-Metal-Oxide-Semiconductor device having an N-channel and a P-channel component comprising:

subjecting the dielectric of the N-channel component to ion implantation to prevent positive space charge buildup upon exposure to radiation.

3,862,931

GITOXIGEN IN-DIGITOXOSIDE COMPOUNDS AND THERAPEUTIC COMPOSITIONS FOR COMBATING CARDIAC INSUFFICIENCY

Fritz Kaiser, Lampertheim; Hans Joachim Lubs, Weinheim; Wolfgang Schaumann, Heidelberg, and Wolfgang Voigtlander, Viernheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

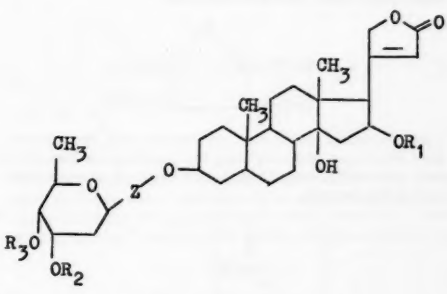
Filed Mar. 11, 1974, Ser. No. 450,256

Claims priority, application Germany, Apr. 19, 1973, 2319873

Int. Cl. C07c *173/00*

U.S. Cl. 260—210.5 **19 Claims**

1. Gitoxigenin-digitoxoside compound of the formula



wherein

R_1 is alkyl of up to 3 carbon atoms or alkoxyalkyl of up to 3 carbon atoms per alkyl moiety;

R_2 and R_3 are individually selected from hydrogen, alkyl of up to 3 carbon atoms or alkoxyalkyl of up to 3 carbon atoms per alkyl moiety; or

R_2 and R_3 together represent an acetal or ketal grouping of from 2 to 10 carbon atoms; and

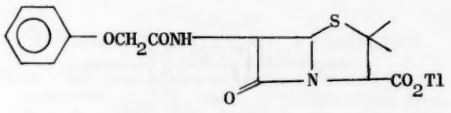
Z is a valency bond or represents two digitoxose residues.

3,862,932
THALLIUM (I) PENICILLANATES

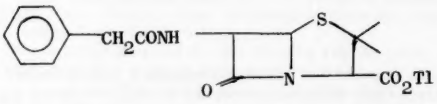
John H. Sellsted, King of Prussia, and Daniel M. Teller, Devon, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 27, 1972, Ser. No. 301,702
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 2 Claims

1. The compound which is



2. The compound which is

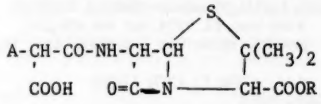


3,862,933
PROCESS FOR MAKING ESTERS OF 6-(ALPHA-(CARBOXY)ARYLACETAMIDO)PENICILLANIC ACIDS

Irving M. Goldman, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

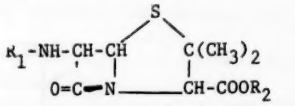
Filed July 12, 1972, Ser. No. 271,160
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 7 Claims

1. In the process for making 6-[α-(carboxy)arylacetamido] arylacetamido]penicillanic acids of the formula



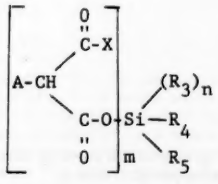
I

by the acylation, in an anhydrous reaction-inert solvent at a temperature of from −10° to about 20°C., of an ester of 6-amino-penicillanic acid of the formula



II

with a monoacid halide of an arylmalonic acid, the improvement which comprises acylating the 6-aminopenicillanic acid ester with a silyl ester of a monoacid halide of an arylmalonic acid of the formula



III

wherein A is selected from the group consisting of 3-thienyl, phenyl and substituted phenyl wherein the substituent is selected from the group consisting of alkyl of from 1 to 4 carbon atoms, chloro, bromo, fluoro, trifluoromethyl and alkoxy of from 1 to 4 carbon atoms;

X is selected from the group consisting of chloro and bromo;

R is selected from a first group consisting of hydrogen, a second group consisting of cyanomethyl, benzhydryl, 2,2,2-trichloroethyl, 2-iodoethyl, 2-bromoethyl, benzyl, phenacyl, substituted benzyl and substituted phenacyl wherein the substituent is selected from the group consisting of halogen, alkyl of from 1 to 4 carbon carbon atoms, alkoxy of from 1 to 4 carbon atoms and nitro; and a third group consisting of acyloxy alkyl having from 1 to 4 carbon atoms in the alkyl moiety and wherein acyloxy is selected from the group consisting of alkanoyloxy of from 1 to 6 carbon atoms, benzoyloxy and substituted benzoyloxy wherein the substituent is selected from the group consisting of chloro, bromo, fluoro, alkyl of from 1 to 4 carbon atoms, alkoxy of from 1 to 4 carbon atoms and trifluoromethyl;

m is an integer from 1 to 2; ;

n is 0 or 1, with the proviso that when m is 2, n is 0;

R_1 is selected from the group consisting of hydrogen and $-SiR_3R_4R_5$; and

R_2 is selected from the group consisting of R and $-SiR_3R_4R_5$;

each of R_3, R_4 and R_5 is selected from the group consisting of of hydrogen, alkyl of from 1 to 4 carbon atoms, phenyl, benzyl, tolyl and dimethylaminophenyl;

treating the acylated product thus produced with a hydroxylic-containing solvent;

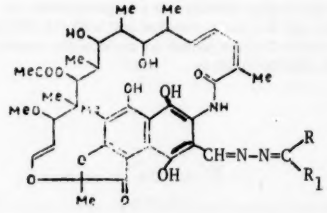
and recovering the product of formula I.

3,862,934
3-HYDRAZONOMETHYL RIFAMYCINS

Renato Cricchio, Varese, and Giancarlo Lancini, Pavia, both of Italy, assignors to Gruppo Lepitit S.p.A., Milano, Italy

Filed Feb. 16, 1973, Ser. No. 333,111
Claims priority, application Italy, Feb. 23, 1972, 20911/72
Int. Cl. C07d 99/02, 99/04
U.S. Cl. 260—239.3 P 5 Claims

1. A 3-hydrazonomethyl-rifamycin designated by the formula



wherein Me represents methyl, R represents hydrogen or phenyl, R_1 represents phenyl or carboxyphenyl, and R and R_1 taken together with the adjacent carbon atom may represent a 5 to 10 carbon atom cycloalkylidene group; derived from a corresponding cycloalkane and 25-desacetyl and 16, 17; 18, 19; 28, 29-hexahydro derivatives thereof.

3,862,935
BROMINATED AMIDES OF SULFOACETIC ACID

Christian T. Goralski, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 8, 1973, Ser. No. 330,612
Int. Cl. C07d 87/46, 29/34; C07c 143/78
U.S. Cl. 260—246 B 5 Claims

1. A brominated sulfoacetic acid amide represented by the formula

$R_1R_2NCOBr_xH_{2-x}SO_2NR_1R_2$

wherein R_1 and R_2 are independently selected from hydrogen and lower alkyl or, in conjunction with the nitrogen atom, form a heterocycle of the group of pyrrolidino, piperidino, morpholino, 4-methylpiperidino and 2,6-dimethylmorpholino, and x is an integer from 1 to 2.

3,862,936

MANNICH DERIVATIVES OF 4,4'-DIHYDROXY-3,3'DINITROBENZOPHENONE

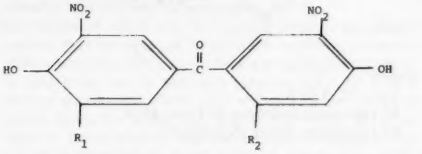
Charles F. Geschickter, Fairfax, Va., assignor to The Geschickter Fund for Medical Research, Washington, D.C.

Filed Jan. 24, 1973, Ser. No. 326,243

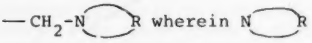
Int. Cl. C07d *87/40*

U.S. Cl. 260—246 B **8 Claims**

1. A compound of the formula:



wherein R_1 and R_2 are the same or different Mannich groups selected from a group of the formula



is a cyclic amine selected from pyrrolidine, morpholine, piperidine, piperazine, isoindole, and the non-toxic, therapeutically active acid addition salts thereof.

3,862,937

6-PHENETHYL-3-PIPERIDINECARBOXAMIDES

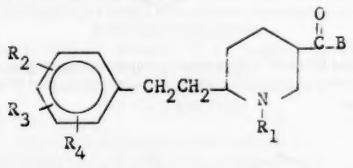
Joseph Sam, Oxford, Miss., assignor to The University of Mississippi, University, Miss.

Filed Feb. 23, 1972, Ser. No. 228,768

Int. Cl. C07d *87/40*

U.S. Cl. 260—247.5 G **7 Claims**

1. A piperidine of the formula



wherein B is a member selected from the group consisting of lower-alkylamino and morpholino, R_1 is lower alkyl, and R_2, R_3 and R_4 are each a member selected from the group consisting of hydrogen and lower alkoxy.

3,862,938

2-(2-AMINOETHYL) PIPERAZINES

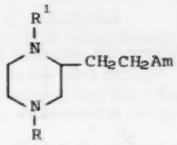
Carl Dalton Lunsford, Richmond, and Albert Duncan Cale, Jr., Mechanicsville, both of Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Continuation-in-part of Ser. No. 32,346, April 27, 1970. This application Feb. 29, 1972, Ser. No. 230,459

Int. Cl. C07d *87/40*

U.S. Cl. 260—247.5 D **5 Claims**

1. A compound of the formula



wherein R is lower alkyl or cyclohexyl; R^1 is phenyl; Am is lower-alkylamino, di-lower-alkylamino or morpholino or the pharmaceutically acceptable acid addition salts thereof.

3,862,939

3-(3-CHLORO-2-PROPENYL)-1,3,5,7-TETRAAZABICYCLO(3.3.1) NONANE-3-METHANOL AND ITS PREPARATION

Thomas P. Brady, Natick, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 23, 1973, Ser. No. 408,889

Int. Cl. C07d *55/14*

U.S. Cl. 260—248 NS **4 Claims**

1. A member of the group consisting of 7-cis-(3-chloro-2-propenyl)-1,3,5,7-tetraazabicyclo(3.3.1)nonane-3-methanol and 7-cis-trans-(3-chloro-2-propenyl)-1,3,5,7-tetraazabicyclo(3.3.1)nonane-3methanol.

3,862,940

PREPARATION OF CARBOXYLATE AND SULFONATE SALTS OF 1-CIS-(3-CHLORO-2-PROPENYL)-3,5,7-TRIAZA-1-AZONIATRI CYCLO(3.3.1.13,7)DECANE

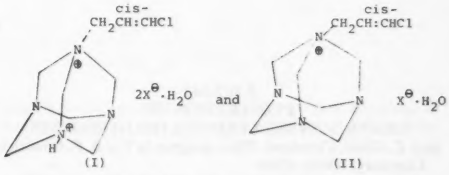
Albertha B. Mitchell, Waltham, Mass.; Charles E. Moppett, Waterford, Conn., and Thomas P. Brady, Natick, Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 24, 1973, Ser. No. 409,340

Int. Cl. C07d *55/14*

U.S. Cl. 260—248 NS **14 Claims**

1. A compound corresponding to one of the formulas



wherein X represents a lower alkyl carboxylate (I), a lower alkyl sulfonate (II), a benzoate (I) or a phenylsulfonate (II) salt wherein the phenyl group may contain lower alkyl, lower alkoxy, hydroxyl, amino, nitro, chloro or bromo substitution.

3,862,941

2-(THIOCARBONYLAMINO)ACETAMIDOCEPHALOSPORANIC ACID COMPOUNDS

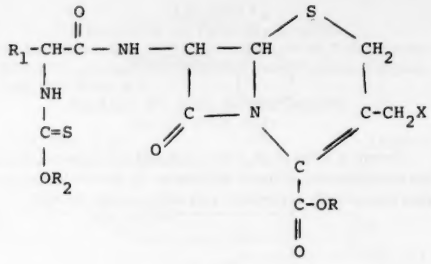
Herman Breuer, Burgweinting, and Uwe Treuner, Regensburg, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Nov. 4, 1971, Ser. No. 195,807The portion of the term of this patent subsequent to Dec. 17, 1991, has been disclaimed.

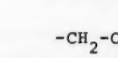
Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **9 Claims**

1. A compound of the formula



wherein R is hydrogen, lower alkyl



alkali metal, alkaline earth metal or triethylamine; R_1 is hydrogen, lower alkyl, allyl, cyclopentyl, cyclohexyl, cyclohexadienyl, R_4-phenyl or thienyl; R_2 is lower alkyl, phenyl, phenyl-lower alkyl or thienyl; R_3 is lower alkyl or phenyl; R_4 is hydrogen, halo or lower alkoxy; and X is hydrogen, hydroxy or lower alkanoyloxy.

3,862,942

PREPARATION OF 2,4,6-TRIS(HYDROXYBENZYLTHIO)TRIAZINES

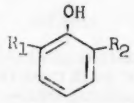
Jack C. Gilles, Cleveland, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 191,492, Oct. 21, 1971, abandoned. This application Nov. 14, 1973, Ser. No. 415,505

Int. Cl. C07d *55/50*

U.S. Cl. 260—248 CS **6 Claims**

1. A process for preparing 2,4,6-tris(4-hydroxybenzylthio)triazines comprising reacting together trithiocyanuric acid, formaldehyde, and a 1-hydroxybenzene of the formula



wherein R_1 and R_2 are selected from the group consisting of hydrogen, an alkyl group containing 1 to 24 carbon atoms, a cyanoalkyl group containing 2 to 10 carbon atoms in the group, and an alkoxy group or an alkylalkoxy group containing 1 to 10 carbon atoms in the group, said reaction being conducted in the presence of a hydrogen halide and water, and in an organic acid as a solvent.

3,862,943

2-HYDROXYALKYL L-4,5-DIHYDROPYRIDAZIN-3 (2H)-NE DERIVATIVES

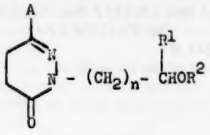
William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 280,670, Aug. 14, 1972, Pat. No. 3,790,572, which is a continuation-in-part of Ser. No. 242,796, April 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 178,815, Sept. 8, 1971, abandoned. This application Oct. 5, 1973, Ser. No. 403,782

Int. Cl. C07d *51/04*

U.S. Cl. 260—250 A **9 Claims**

1. A compound of the formula:

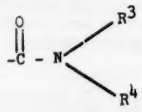


where

n is 1, 2, 3 or 4;

R^1 represents hydrogen or lower alkyl

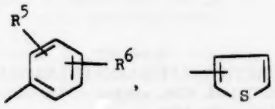
R^2 represents, lower alkanoyl or



where

R^3 and R^4 each, independently, represent hydrogen or lower alkyl and

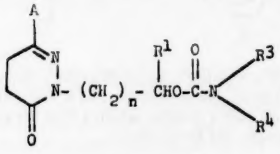
A represents



or

where

R^5 and R^6 each, independently, represent hydrogen or halo having an atomic weight of 19 to 36 except that R^2 cannot be



3,862,944

CERTAIN PYRIMIDINE-CONTAINING DYESTUFFS

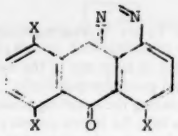
Heinz Ellingsfeld, Frankenthal, and Gerd Schwantje, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine). Germany

Filed May 10, 1972, Ser. No. 252,031

Int. Cl. C07d *51/46*

U.S. Cl. 260—256.5 R **8 Claims**

1. A dye of the formula:



in which each of two of the radicals X is hydroxyl and the third X is a radical selected from the group consisting of:

alkylamino of one to eight carbon atoms in which one or two hydrogens may be replaced by hydroxyl, alkoxy of one to three carbon atoms, cyano, carboxamido, N,N-dimethylcarboxamido, alkoxycarbonyl of a total of two to five carbon atoms, sulfonamido, N,N-dimethylsulfonamido or pyrrolidon-2-yl-1;

phenylamino in which one or two hydrogens in the phenyl radical may be replaced by chlorine, bromine, hydroxyl, trifluoromethyl, nitro, sulfonamido or sulfonamido which is substituted on its nitrogen atom by alkyl of 1 to 8 carbon atoms or by alkoxyalkyl of 3 to 8 carbon atoms or which forms the amide with the nitrogen atom of piperidine or pyrrolidine or morpholine, carboxamido or N-alkylcarboxamido of a total of 2 to 7 carbon atoms, alkoxycarbonyl of a total of two to five carbon atoms, methyl, ethyl, methoxy or ethoxy;

phenylthio;

alkanoylamino of two to six carbon atoms in which one or two hydrogen atoms may be replaced by chlorine, bromine, methyl, ethyl, methoxy or ethoxy;

cycloalkanoylamino of seven to eight carbon atoms;

benzoylamino in which one or two hydrogen atoms may be replaced by chlorine, bromine, methyl, ethyl, methoxy or ethoxy; and

N'-alkylureido of two to five carbon atoms in the alkyl moiety.

3,862,945

1,2,3,4,6,7,8,9-OCTAHYDRO-3,8-DIMETHYL-4,9-DIPHENYLPYRIDO (3,4-G)ISOQUININOLINE DIHYDROCHLORIDE

Thomas J. Schwan, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,735
Int. Cl. C07d *39/00*
U.S. Cl. 260—286 R **1 Claim**

1. 1,2,3,4,6,7,8,9-Octahydro-3,8-dimethyl-4,9-diphenylpyrido [3,4-g]isoquinoline dihydrochloride.

3,862,946

N-BENZYL-N-[2-PHENYL-2-(4-PHENYL-1-PIPERIDYL)ETHYL] PROPIONAMIDE PARA-CHLOROBENZENE SULFONATE

Herbert John Havera, Edwardsburg, Mich., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 24, 1973, Ser. No. 363,425
Int. Cl. C07d *29/30*
U.S. Cl. 260—293.76 **1 Claim**

1. N-benzyl-N-[2-phenyl-2-(4-phenyl-1-piperidyl) ethyl]-propionamide p-chlorobenzenesulfonate.

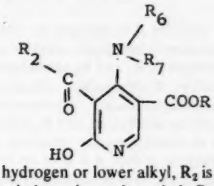
3,862,947

INTERMEDIATE FOR PRODUCTION OF ALKOXY DERIVATIVES OF PYRAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS

Theodor Denzel, Nurnberg, and Hans Hoehn, Tegernheim, both of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 217,295, Jan. 12, 1972, Pat. No. 3,763,172. This application June 11, 1973, Ser. No. 368,800
Int. Cl. C07d *31/36*
U.S. Cl. 260—295.5 R **3 Claims**

1. A compound of the formula



wherein R is hydrogen or lower alkyl, R_2 is hydrogen, lower alkyl, phenyl, benzyl or phenethyl, R_6 is hydrogen or lower alkyl and R_7 is lower alkyl.

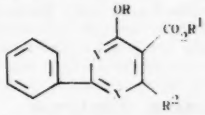
3,862,948

4-SUBSTITUTED -6-METHOXY-2-PHENYL-5-PYRIMIDINE CARBOXYLIC ACIDS

Dong H. Kim, Wayne, and Arthur A. Santilli, Havertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,306
Int. Cl. C07d *51/42*
U.S. Cl. 260—256.4 C **7 Claims**

1. A compound of the formula



wherein R is lower alkyl; R^1 is hydrogen or lower alkyl; and R^2 is methylamino, α, α, α-trifluoro-m-toluidino, or 2,3-xylidino.

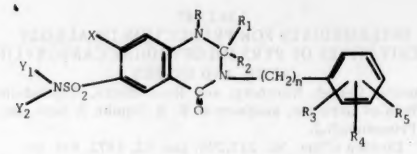
3,862,949

PREPARATION OF 3-ARYL AND 3-ARALKYL 6-SULFAMYL-7-HALO-1,3,4-TETRAHYDRO-4-QUINAZOLINONE

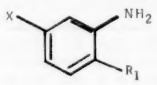
Bola Vithal Shetty, Rochester, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation of Ser. No. 50,895, June 29, 1970, abandoned, which is a continuation-in-part of Ser. No. 874,960, Nov. 7, 1969, abandoned, which is a continuation-in-part of Ser. No. 743,615, July 10, 1968, Pat. No. 3,567,746. This application Dec. 15, 1972, Ser. No. 315,702
Int. Cl. C07d *51/48*
U.S. Cl. 260—256.5 R **4 Claims**

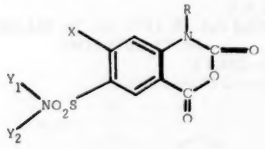
1. In a process for the preparation of 6-sulfamyl-1,2,3,4-tetrahydro-4-quinazolinone represented by the formula



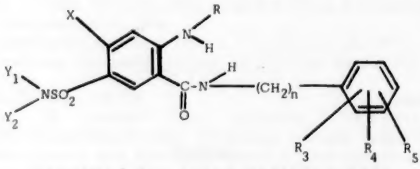
or a salt thereof wherein X is halogen or trifluoromethyl; Y_1 and Y_2 are independently hydrogen, alkyl or acyl; R is hydrogen, alkyl, aryl or aralkyl; R_1 and R_2 are independently hydrogen, alkyl, haloalkyl, hydroxyalkyl, alkoxyalkyl, thioalkyl, alkylthioalkyl, haloalkylthioalkyl, arylthioalkyl, cycloalklyl, cycloalkylalkyl, aryl or aralkyl; R_1 and R_2 taken together with the carbon atom to which they are attached are a cycloalkyl group or a heterocyclic group; *n* is 0 or an integer from 1 to 4; and R_3, R_4 and R_5 are independently hydrogen, alkyl, alkoxy, hydroxy, halogen, trifluoromethyl, the radical $-SO_2NH_2$, or amino; wherein a 5-halo-2-lower alkyl aniline of the formula



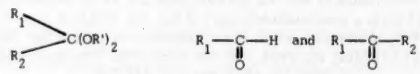
wherein X is halogen or trifluoromethyl and R_1 is lower alkyl, is converted to a 7-halo-6-sulfamylisatoic anhydride of the formula



and then to a benzamide of the formula



and said benzamide is reacted with an acetal, aldehyde or ketone represented, respectively, by the formula

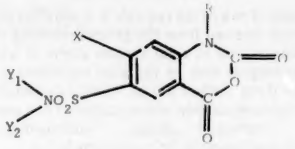


wherein R′ is a hydrocarbon group; and,

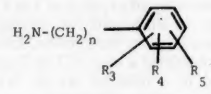
a. when R is benzyl, optionally hydrogenating the product thus obtained to replace said benzyl with a hydrogen atom,

b. when Y_1 and Y_2 are hydrogen, optionally reacting the product thus obtained with an alkylating or acylating agent to replace at least one of the hydrogen atoms with an alkyl or acyl group, respectively,

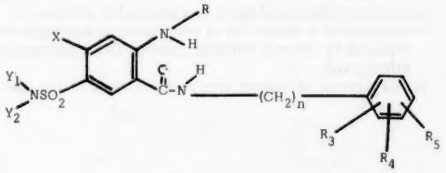
and, optionally, reacting the resulting product with an acid or a base to provide a salt, the improvement comprising reacting a 7-halo-6-sulfamylisatoic anhydride of the formula



with an amine having the formula



to produce a benzamide of the formula



3,862,950

DIBENZO[B,F]-S-TRIAZOLO[4,3-A][1,4]DIAZEPIN-3-ONES

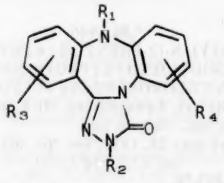
Jacob Szmuskovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 307,113, Nov. 16, 1972, abandoned, which is a continuation-in-part of Ser. No. 220,405, Jan. 24, 1972, abandoned. This application Aug. 7, 1973, Ser. No. 386,276

Int. Cl. C07d *57/02, 57/04, 99/02*

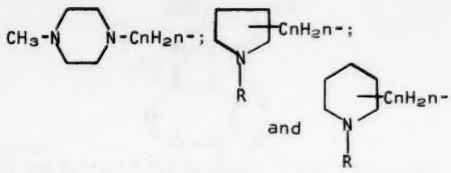
U.S. Cl. 260—268 PC **17 Claims**

1. A compound selected from the group consisting of triazoloazepines of the formula III:

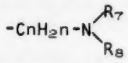


III

wherein R_1 is hydrogen, alkyl of 1 to 3 carbon atoms, inclusive,



in which n is 2 or 3, inclusive, and R is alkyl defined as above, or R_1 is



in which n is defined as above, R_7 and R_8 are hydrogen or alkyl, as defined above, and n is defined as above, or together

is pyrrolidino or piperidino; wherein R_2 has the same significance as R_1; and wherein R_3 and R_4 are hydrogen, fluoro, chloro, bromo, alkyl defined as above, trifluoromethyl, or alkylthio of 1 to 3 carbon atoms, inclusive, and the pharmacologically acceptable acid addition salts thereof.

3,862,951

2'QUINOLDINYL GLYCEROL COMPOUNDS

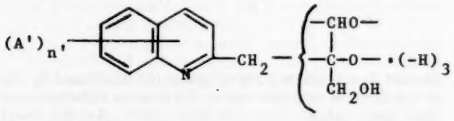
Ken Gottwald, Redwood City; Terry Burkoth, Palo Alto, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syva Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 177,901, Sept. 2, 1971, abandoned. This application Sept. 5, 1972, Ser. No. 286,520

Int. Cl. C07d *33/38*

U.S. Cl. 260—289 R **2 Claims**

1. A compound of the formula:



wherein 3 of the 4 free valences of the trioxypropyl are satisfied by hydrogen, and the remaining valence by quinaldinyl;

n' is 0, 1 or 2; and

A' is F, Cl Br, alkoxy of from 1 to 6 carbon atoms, or primary or secondary alkyl of from 1 to 6 carbon atoms.

3,862,952

METHOD FOR PREPARING 3,5,6-TRICHLORO-2-PYRIDYLOXYACETIC ACID

Lowell D. Markley, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 30, 1973, Ser. No. 393,105

Int. Cl. C07d *31/36*

U.S. Cl. 260—295 R **6 Claims**

1. A method for preparing 3,5,6-trichloro-2-pyridyloxyacetic acid which comprises (a) reacting 2,3,5,6-tetrachloropyridine with paraformaldehyde and an alkali-metal cyanide in an anhydrous water-miscible inert aprotic organic solvent at a temperature of from about 15° to about 75°C. and (b) converting the resulting 3,5,6-trichloro-2-pyridyloxyacetonitrile to the desired acid by aqueous acid hydrolysis and recovering the thus-formed 3,5,6-trichloro-2-pyridyloxyacetic acid.

3,862,953

CYCLOALKENE(B)INDOLES

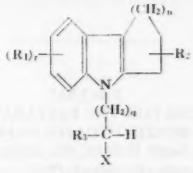
Leo Berger, Montclair, and Alfred John Corraz, Wayne, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 267,330, June 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 171,743, Aug. 13, 1971, abandoned. This application July 27, 1972, Ser. No. 275,598

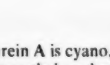
Int. Cl. C07d *31/40*

U.S. Cl. 260—295 T **12 Claims**

1. A compound of the formula

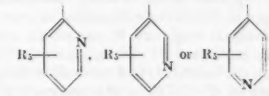


wherein n and r are independently 1 or 2; q is 0 to 4; R_1 independently is hydrogen, halogen, hydroxy-lower alkyl, lower alkyl, lower alkoxy, alkanoyl of 1 to 7 carbon atoms, benzoyl, benzyloxy, hydroxy, lower alkylthio, trifluoromethyl, carboxy, cyano, carbo-lower alkoxy, nitro, amino, mono-lower alkylamino, di-lower alkylamino, sulfamoyl, di-lower alkylsulfamoyl or difluoromethylsulfonyl, and when r is 2, R_1 with an adjacent R_1, is also lower alkylenedioxy; R_2 is



wherein A is cyano, hydroxy or lower alkoxy, Y is hydrogen or methyl, and m is 0 to 7, or

wherein B is hydroxy, lower alkoxy, amino, hydroxyamino, mono-lower alkylamino, di-lower alkylamino, amino-lower alkoxy, mono-lower alkylamino-lower alkoxy, di-lower alkylamino-lower alkoxy, Q is lower alkylene and p is 0 to 1; R_3 is hydrogen, hydroxy or lower alkyl; and X is



wherein R_5 is hydrogen or lower alkyl, a stereoisomer thereof; an addition salt thereof with a pharmaceutically acceptable acid; a salt thereof with a pharmaceutically acceptable base when at least one R_1 is carboxy and/or when B is hydroxy; or the methylsulfate quaternary salt thereof at the pyridine N.

3,862,954

1,3,5-SUBSTITUTED-1,2,4-TRIAZOLES AND THEIR PREPARATION

Amedeo Omodei-Sale, Voghera, Italy, assignor to Gruppo Lepetit S.P.A., Milan, Italy

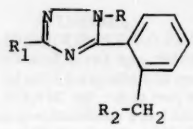
Filed Dec. 6, 1973, Ser. No. 422,376

Claims priority, application Italy, Dec. 22, 1972, 33456/72

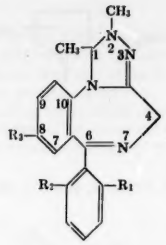
Int. Cl. C07d *31/42*, *55/02*

U.S. Cl. 260—296 R **12 Claims**

1. A compound of the formula



wherein R is lower alkyl; R_1 is selected from the group consisting of a pyridyl, a thienyl, a furyl, indolyl or a pyrrolyl radical; R_2 is hydrogen or hydroxyl; and a salt thereof with a pharmaceutically acceptable acid.



IV

3,862,955

PROCESS FOR THE PREPARATION OF 1,2-BENZISOTHIAZOLIN-3-ONES

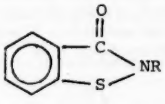
John C. Grivas, South Holland, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 32,467, April 27, 1970, abandoned. This application June 2, 1972, Ser. No. 259,115

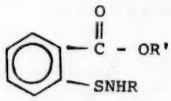
Int. Cl. C07d *91/10*

U.S. Cl. 260—304 **13 Claims**

1. The process of preparing a 1,2-benzisothiazolin-3-one of the formula



comprising the steps of cyclizing an aromatic sulfenamide of the formula



wherein R represents a hydrocarbon radical of not more than 20 carbon atoms, a hydroxyalkyl radical of not more than 8 carbon atoms, halogenated aromatic hydrocarbon radical in which the halogen is attached to an aromatic nucleus therein, or pyrimidyl or pyridyl radical in which said radical is attached to the nitrogen of the formula through a valency on a carbon atom of its nuclear ring; and R′ represents a hydrocarbon radical of not more than 20 carbon atoms, the aliphatic portions of which are saturated; said cyclization being effected at a temperature of 0°–100°C. in the presence of an alkaline material having no more than 10 carbon atoms therein and selected from the class consisting of alkali metal hydroxide, alkoxide, aryloxide, cycloalkoxide, primary, secondary and tertiary amines, and quaternary ammonium hydroxide.

3,862,956

2,4-DIHYDRO-2-SUBSTITUTED-1H-S-TRIAZOLA[4,3-A][1,4]-BENZODIAZEPINES

Jackson B. Hester, Jr., Galesburg, and Jacob Szmuszkovicz, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 178,791, Sept. 8, 1971, abandoned. This application Dec. 17, 1973, Ser. No. 425,265

Int. Cl. C07d *53/06, 57/02*

U.S. Cl. 260—308 R **3 Claims**

1. A benzodiazepine selected from the group consisting of a compound of the formula IV:

wherein R_1 is hydrogen, chloro or fluoro; wherein R_2 is hydrogen, or fluoro providing R_1 is fluoro; wherein R_3 is chloro or fluoro, and the pharmacologically acceptable acid addition salts of compounds of formulae IV.

3,862,957

1,2,4-TRIAZOL-3-OL ESTERS

Dag Dawes, Pratteln, and Beat Bohner, Binningen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

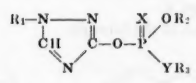
Filed Oct. 16, 1972, Ser. No. 298,160

Claims priority, application Switzerland, Oct. 21, 1971, 15340/71; Aug. 24, 1972, 12542/72

Int. Cl. C07d *55/06*

U.S. Cl. 260—308 R **10 Claims**

1. A compound of the formula



wherein R_1 represents a phenyl group (a) substituted by one or two bromine or iodine atoms, the same or different lower alkyl, lower alkoxy, lower alkylthio, lower alkyl-SO, lower alkyl-SO_2, or O_2N groups or (b) substituted by one chlorine atom and one bromine or iodine atom, a lower alkyl, lower alkoxy, lower alkylthio, lower alkyl-SO, lower alkyl-SO_2 or O_2N group or R_1 represents an unsubstituted or halogenated, lower alkylated or lower alkoxylated phenyl-lower alkyl or diphenylmethyl group, R_2 and R_3 each represent lower alkyl and X and Y are each oxygen or sulphur.

3,862,958

MANUFACTURE OF INDAZOLES

Christoph Ruechardt, Burghoefen bei Kirchzarten; Volker Hassmann, Muenster; Hans-Juergen Quadbeck-Seeger, Ludwigshafen, and Herbert Armbrust, Gruenstadt, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

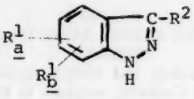
Filed Nov. 6, 1972, Ser. No. 304,241

Claims priority, application Germany, Nov. 9, 1971, 2155545; Mar. 3, 1972, 2210169

Int. Cl. C07d *47/18*

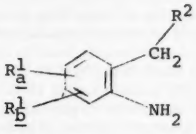
U.S. Cl. 260—310 C **12 Claims**

1. A process for the manufacture of an indazole of the formula



I

wherein
R_a^1 and R_b^1 each is hydrogen, alkyl of from 1 to 6 carbon atoms, benzyl, chlorine, bromine or iodine, and R^2 is hydrogen or alkyl of from 1 to 6 carbon atoms, with the proviso that the R^1 and R^2 radicals may bear an inert substituent selected from the group consisting of alkyl and alkoxy each of from 1 to 3 carbon atoms,
which process comprises reacting at a temperature of between 45° and 130° C. an o-toluidine of the formula



II

where R_a^1, R_b^1 and R^2 have the meanings stated, with a nitrosating agent selected from the class consisting of
nitrous gases,
alkyl nitrites having from 1 to 5 carbon atoms, and
esters of glycols or glycol derivatives with nitrous acid having the formula

$$ONO - R - X \qquad III$$

where R is a radical of the formula

$$-R^3-O- \quad \text{or} \quad -(CH-CH_2O)_n-$$
$$\qquad\qquad\quad |$$
$$\qquad\qquad\quad R^4$$

where R3 is alkylene of from 3 to 12 carbon atoms, R^4 is hydrogen or alkyl of from 1 to 4 carbon atoms, *n* is one of the numbers 1, 2, 3 or 4 and X is —NO, alkyl of from 1 to 4 carbon atoms, aralkyl of from 7 to 12 carbon atoms, cyclohexyl, cyclopentyl, phenyl, or alkylcarbonyl of from 2 to 5 carbon atoms, with the proviso that all of said radicals represented by R^3, R^4 and X may bear an inert substituent selected from the group consisting of alkoxy and alkyl each of from 1 to 3 carbon atoms, said reaction being carried out in the presence of acetic anhydride, an alkali metal salt of an alkanoic acid having from 1 to 6 carbon atoms and an organic solvent which is inert under the conditions of the reaction.

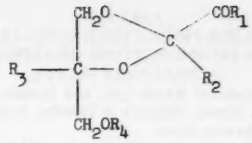
3,862,959

CYCLIC ACETALS OF ALPHA-OXOCARBOXYLIC ACID DERIVATIVES

Peter Kirby, and Eirlys R. Isaac, both of Kent, England, assignors to Shell Oil Company, New York, N.Y.

Filed May 18, 1972, Ser. No. 254,536
Claims priority, application Great Britain, May 27, 1971, 17564/71
Int. Cl. C07d *13/04*
U.S. Cl. 260—340.9 **5 Claims**

1. A compound having a structure defined by the formula



where R_1 is —NHZ in which Z is hydrogen, alkyl of up to 6 carbon atoms, cyclohexyl, benzyl, phenyl or phenyl substituted by a fluorine atom, by one or two chlorine atoms, by one or two alkyl groups of 1–2 carbon atoms or by alkoxy of 1–2 carbon atoms; R_2 is hydrogen or alkyl of 1–6 carbon atoms; R_3 is alkyl of 1–6 carbon atoms; and R_4 is benzyl.

3,862,960

PROCESS FOR THE OXIDATION OF ORTHOXYLENE OR NAPHTHALENE TO PHTHALIC ANHYDRIDE

Thomas Henry Cheavens, Glenwood, and Stewart Robert, Ashton, both of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed May 3, 1972, Ser. No. 249,906
Int. Cl. C07c *63/18*
U.S. Cl. 260—346.4 **13 Claims**

1. A process for the catalytic vapor phase oxidation of an aromatic hydrocarbon selected from the group consisting of naphthalene and orthoxylene to phthalic anhydride ccomprising contacting said aromatic hydrocarbon and an oxygen containing gas with a catalyst bed consisting in weight % of about 30 to 90 percent of a titania catalyst support impregnated with from 1 to 10 percent vanadium pentoxide, .5 to 20 percent antimony trioxide, and 2 to 40 percent of cesium pyrosulfate, followed by recovery of phthalic anhydride.

3,862,961

EXPOXIDATION OF OLEFINS WITH LESS STABLE ORGANIC HYDROPEROXIDES BY USING AN ALCOHOL STABILIZING AGENT

Ming N. Sheng, Cherry Hill, N.J.; John G. Zajacek, Strafford, Pa., and Thomas N. Baker, III, Sudbury, Mass., assignors to Atlantic Richfield Company, New York, N.Y.

Continuation-in-part of Ser. No. 95,375, Dec. 4, 1970, abandoned. This application Sept. 20, 1972, Ser. No. 290,592
Int. Cl. C07d *1/08, 1/12*
U.S. Cl. 260—348.5 L **6 Claims**

1. A method for the epoxidation of olefins characterized by having the formula

$$R-\underset{\displaystyle Y}{\underset{|}{CH}}-CH=CH_2$$

wherein R is hydrogen or an alkyl group having from 1 to 17 carbon atoms and Y is hydrogen, employing as the oxidizing agent a less stable organic hydroperoxide selected from the group consisting of cyclohexyl hydroperoxide and amylene hydroperoxide which comprises contacting said olefin with said hydroperoxide in the presence of a molybdenum-containing catalyst and as a stabilizing compound tertiary butyl alcohol at a temperature ranging between 50°C. to 140°C. under a pressure of at least the autogenous pressure of the reaction at the temperature employed, and with the mole ratio of said stabilizing compound to said hydroperoxide being in the range of from about 1:1 to 3:1.

TMO

3,862,962
PROCESS FOR PRODUCING GRANULAR ACTIVE CARBON FROM A MIXTURE OF ASPHALT AND ELEMENTARY SULFUR

Tomoaki Hanamura; Ryuzo Ijiri, and Masami Mori, all of Chiba-Ken, Japan, assignors to Idemitso Kosan Kabushiki Kaisha, Tokyo-to, Japan

Filed Apr. 24, 1973, Ser. No. 354,011
Claims priority, application Japan, Apr. 25, 1972, 47-40937
Int. Cl. C01b 31/08
U.S. Cl. 252—422 4 Claims

1. A process for producing granular active carbon from a mixture of an asphaltic material and elementary sulfur, comprising the steps of reacting said mixture by heating at a temperature sufficient to fuse the mixture up to about 350°C for a time sufficient to form an infusible hardened product, crushing such product into powder, shaping the powder with a binding amount of an asphaltic binder into granules, baking without incinerating the granules in an atmosphere containing from about 4–20 percent of oxygen, whereby said binder is reacted with oxygen to form a solvent insoluble hardened product, and then subjecting the granules to a high temperature activating treatment in the presence of carbon dioxide or steam said mixture comprising 100 parts by weight of an asphaltic material and 66–100 parts by weight of elementary sulfur, and the binding amount of the asphaltic binder being within the range of 5–30 parts by weight per 100 parts by weight of crushed powder.

3,862,963
ADSORBENT FOR OILS

Hiroshi Hoshi, Narashino; Keiichi Murakami, Kamakura; Ichinari Maeda, Ichihara, and Rinnosuke Susuki, Tokyo, all of Japan, assignors to Lion Fat & Oil Co. and Idemitsu Kosan Co., Ltd, both of Tokyo, Japan

Filed Apr. 23, 1973, Ser. No. 353,472
Claims priority, application Japan, Apr. 26, 1972, 47-42437; May 1, 1972, 47-51735
Int. Cl. B01j 1/22
U.S. Cl. 252—428 6 Claims

1. An adsorbent for oils, comprising a foamed substance having a bulk density of less than 1 and consisting essentially of 5 to 90 percent by weight of at least one synthetic resin insoluble in water and oil and selected from the group consisting of polyethylene, polypropylene and ethylene-vinyl acetate copolymer, and 10 to 95 percent by weight of at least one inorganic filler selected from the group consisting of calcium sulfite, gypsum, calcium carbonate, silica and talc.

3,862,964
DEHYDRATION CATALYSTS, PARTICULARLY FOR THE DEHYDRATION OF DIOLS

Joseph-Edouard Weisang; Georges Szabo, both of Le Havre, and Jean Maurin, Montivilliers, all of France, assignors to Companie Francaise De Raffinage, Paris, France

Continuation-in-part of Ser. No. 132,892, April 9, 1971, Pat. No. 3,781,222. This application July 16, 1973, Ser. No. 379,820
Claims priority, application France, July 17, 1972, 72.25770; Jan. 5, 1973, 73.00402
Int. Cl. B01j 11/82
U.S. Cl. 252—437 6 Claims

1. In a dehydration catalyst consisting essentially of at least one mixed or unmixed pyrophosphate of at least one metal chosen from the group consisting of lithium, sodium, strontium and barium, the improvement in which said catalyst further consists of a compound of chromium chosen from the group consisting of chromium oxide and chromium phosphate in an amount, expressed as element, which is less than about 2% of the total weight of the catalyst.

3,862,965
SHAPED WASHING AGENTS BASED ON SYNTHETIC TENSIDES

Lothar Werner, Krefeld, and Werner Schneider, Krefeld-Bockum, both of Germany, assignors to Henkel and Cie GmbH, Dusseldorf-Holthausen, Germany

Continuation of Ser. No. 76,203, Sept. 28, 1970, abandoned. This application Nov. 13, 1972, Ser. No. 306,014
Claims priority, application Germany, Oct. 1, 1969, 1949562
Int. Cl. C11d 3/066
U.S. Cl. 252—555 7 Claims

1. Shaped washing agents based on synthetic detergents having a composition consisting essentially of (A) from 55% to 80% by weight of a tenside mixture consisting essentially of (1) from 70% to 100% by weight of said tenside mixture of a sulfonate mixture consisting essentially of (a) from 20% to 70% by weight of said sulfonate mixture of a water-soluble salt of a monoester of a sulfodicarboxylic acid selected from the group consisting of sulfoalkanedioic acids having 3 to 8 carbon atoms and sulfobenzenedicarboxylic acids, monoesterified with fatty alcohols having 8 to 18 carbon atoms, at least 50% of said fatty alcohols having 10 to 16 carbon atoms and (b) from 30% to 80% by weight of said sulfonate mixture of a water-soluble salt of a mixture of hydroxyalkane sulfonates, alkene sulfonates and alkane disulfonates, the individual components of said water-soluble salt of a mixture of sulfonates having 10 to 18 carbon atoms, said water-soluble salts being selected from the group consisting of alkali metal salts and alkylolamine salts, and (2) from 0 to 30% by weight of said tenside mixture of tensides excepting said (a) and (b) selected from the group consisting of anionic surface-active compounds, non-ionic surface-active compounds and amphoteric surface-active compounds, (B) from 18% to 40% by weight of non-tenside water-insoluble superfatting agents melting at from 30°C to 80°C selected from the group consisting of fatty acids, fatty alcohols, monoglycerides of fatty acids, diglycerides of fatty acids, triglycerides of fatty acids, fatty acid esters of fatty alcohols, lanolin, vaseline, esters of 1 mol of a citric acid difatty alcohol ester and 1 mol of pentaerythritol difatty acid ester and non-ionic alkylene oxide derivatives having an alkoxylation degree which is incomplete for water solubility, and (C) from 5% to 10% by water.

3,862,966
2,5-DIMETHYL FURAN-3-CARBOXYLIC ACID CYCLOHEXYLAMIDE

Harry Distler, Ludwigshafen; Rudi Widder, Eppelheim, and Ernst-Heinrich Pommer, Limburgerhof, all of Germany, assignors to Badische Anilin-Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 5, 1971, Ser. No. 131,545
Claims priority, application Germany, Apr. 23, 1970, 2019535
Int. Cl. C07d 5/16
U.S. Cl. 260—347.3 1 Claim

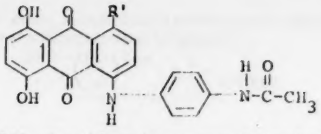
1. 2,5-dimethylfuran-3-carboxylic acid cyclohexylamide.

3,862,967
TETRA-α-SUBSTITUTED ANTHRAQUINONE DERIVATIVES

Walter Hohmann; Heinrich Vollmann, both of Leverkusen; Hans-Samuel Bien, Burscheid, and Gunter Gehrke, Cologne, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 527,502, Feb. 15, 1966, abandoned. This application Dec. 5, 1968, Ser. No. 785,014
Claims priority, application Germany, Feb. 19, 1965, 45295
Int. Cl. C09b 1/50, 1/56
U.S. Cl. 260—377 3 Claims

1. Compounds of the formula



in which R' is selected from the group consisting of amino and alkylamino in which the alkyl group contains 1 to 4 carbon atoms.

3,862,968

PROCESS OF METHYLATING CEPHALINS

Hans Betzing, Horrem, and Dac Lekim, Cologne, both of Germany, assignors to Nattermann, A. & Cie GmbH, Cologne, Germany

Filed May 30, 1973, Ser. No. 365,139

Claims priority, application Germany, May 30, 1972, 2226291

Int. Cl. A23j *7/00*

U.S. Cl. 260—403 **8 Claims**

1. A process of methylating a phosphatide of phosphatidylethanolamine or phosphatidylserine comprising

mixing said phosphatide with formaldehyde in the presence of formic acid, in which connection at least 2 moles formaldehyde and 2 moles formic acid are employed per amino group, and heating the solution to a temperature no greater than about 100°C.

3,862,969

4-HALO-2,4-DIOLEFINIC FATTY ACIDS AND ESTERS

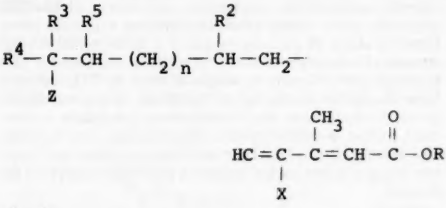
Clive A. Henrick, Palo Alto, Calif., assignor to Zoicon Corporation, Palo Alto, Calif.

Division of Ser. No. 252,383, May 11, 1972, Pat. No. 3,821,264. This application Jan. 7, 1974, Ser. No. 431,521

Int. Cl. C07c *69/62;* **A01n** *9/24*

U.S. Cl. 260—408 **16 Claims**

1. A compound selected from those of the following formula:



wherein,

n is one or two;

X is bromo or chloro;

R is lower alkyl;

each of R^2, R^3 and R^4 is methyl or ethyl;

R^5 is hydrogen or methyl; and

Z is hydrogen, methyl, chloro, hydroxy or lower alkoxy of one to four carbon atoms.

3,862,970

5-CHLORO-2,4-DIOLEFINIC FATTY ACIDS AND ESTERS

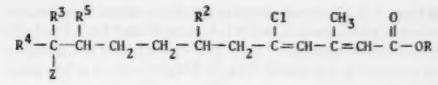
Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Apr. 20, 1973, Ser. No. 352,883

Int. Cl. C07c *69/62, 153/00;* **A01n** *9/24*

U.S. Cl. 260—408 **13 Claims**

1. A compound selected from those of the following formula



wherein,

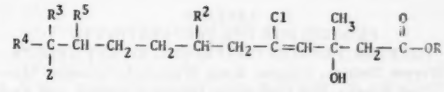
Z is hydrogen or lower alkoxy;

R is hydrogen, lower alkyl, cycloalkyl, lower alkenyl or lower alkynyl;

each of R^2, R^3 and R^4 is methyl or ethyl; and

R^5 is hydrogen or methyl.

9. A compound selected from those of the following formula:



wherein,

Z is hydrogen or lower alkoxy;

each of R^2, R^3 and R^4 is methyl or ethyl;

R^5 is hydrogen or methyl; and

R is hydrogen or lower alkyl.

3,862,971

PROCESS FOR MAKING PERFLUOROCARBOXYLIC ACIDS AND FLUORIDES THEREOF

Werner Rudolph, Anderten; Joachim Massonne, Hannover, and Karl-Heinz Fazniewscy, Lehrte, all of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

Filed Feb. 2, 1973, Ser. No. 329,188

Claims priority, application Germany, Feb. 16, 1972, 2207177

Int. Cl. C07c *51/58, 53/34, 53/36*

U.S. Cl. 260—408 **10 Claims**

1. A process for the production of perfluoroalkylcarbonyl fluorides and perfluoroalkyl carboxylic acids having the formula

$R_f(CF_2CF_2)_{n-1}CF_2COB$

which comprises reacting a perfluoroalkyl iodide having the formula

$R_f(CF_2CF_2)_nI$

in each of which formulae B is a hydroxyl or fluoro radical, R_f is a lower perfluoroalkyl radical, and n is an integer from 1 to 7, the said reaction being performed by heating the perfluoroalkyl iodide with oleum and chlorine at a temperature between 50° and 120°C in the presence of a salt of a metal of Group IIB of the Periodic Table, the molecular ratio of the free sulfur trioxide in the oleum to the perfluoroalkyl iodide being between 2.5:1 and 10:1, and subsequently isolating the resulting perfluoroalkylcarbonyl fluoride from the reaction mixture or converting the perfluoroalkylcarbonyl fluoride to the corresponding perfluoroalkyl carboxylic acid by hydrolysis.

3,862,972

PROCESS FOR PREPARING UNSATURATED CARBOXYLIC ACIDS

Lammert Heslinga, Maasluis; Hendrik Jacob Johannes Pabon, and David Adriaan van Dorp, both of Vlaardingen, all of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 20, 1972, Ser. No. 236,235

Claims priority, application Great Britain, Mar. 25, 1971, 7774/71

Int. Cl. C08h *17/36*

U.S. Cl. 260—413 **10 Claims**

1. A process for preparing an unsaturated carboxylic acid of the structure $RCH_2(C{\equiv}CCH_2)_m(CH_2)_nCH{=}CHCOOH$

of from 5 to 22 carbon atoms in the chain, where R is a monovalent aliphatic radical and m is 0 or an integer from 1 to 5 and n is 0 or an integer from 1 to 6, n being 0 when m is 0, comprising contacting a Grignard reagent RMgBr with an ω-halogeno-2t-enoic acid of the structure $BrCH_2(C \equiv CCH_2)_m(CH_2)_nCH = CHCOOH$ in an inert liquid medium whose temperature is restricted to below −20°C if in the reagents selected the bonds of the α carbon atom of the group R are all single bonds and m and n are 0, and recovering from the medium the acid formed.

3,862,973

PROCESS FOR THE PREPARATION OF POLYISOCYANATES CONTAINING BIURET GROUPS

Werner Dietrich, Cologne; Kuno Wagner, Leverkusen; Manfred Roegler, Bad Godesberg; Helmut Kleimann, and Karl Hartwig Richert, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 121,542, March 5, 1971, abandoned. This application Nov. 6, 1972, Ser. No. 304,168

Claims priority, application Germany, Mar. 7, 1970, 2010887

Int. Cl. C07c *119/04*

U.S. Cl. 260—453 AB **8 Claims**

1. A process for the preparation of liquid polyisocyanates which contain biuret groups comprising reacting organic polyisocyanates of the general formula

$$Q(NCO)_n$$

in which n stands for an integer of 2–4 and Q stands for a hydrocarbon radical selected from the group consisting of C_2–C_{12} aliphatic, C_4–C_{15} cycloaliphatic, C_6–C_{20} aromatic, C_8–C_{20} alkylaromatic, C_7–C_{20} araliphatic hydrocarbon radicals which araliphatic hydrocarbon radicals may also carry C_1–C_4 alkoxy substituents with secondary amines of the general formula

$$R_1—NH—R_2$$

wherein R_1 and R_2 are the same or different and stand for radicals selected from the group consisting of C_1–C_{18}-alkyl, C_6–C_{14}-aryl and C_7–C_{14}-aralkyl or wherein R_1 and R_2 together with the nitrogen atom or part of a heterocyclic pyrrolidine, piperidine or morpholine ring, of of the general formula

$$R_1—NH—R_3—NH—R_2$$

wherein R_1 and R_2 are the same or different and stand for radicals selected from the group consisting of C_1–C_{18}-alkyl, C_6–C_{14}-aryl and C_7–C_{14}-aralkyl and wherein R_3 stands for a radical selected from the group consisting of C_2–C_{12} alkylene and C_6–C_{20} arylene which arylene radical may contain bridge members such as oxygen, sulphur or an optionally C_6–C_{10}-aryl- or C_1–C_4-alkyl substituted methylene group, or wherein R_1 and R_2 together with —NH—R_3—NH— may form a heterocyclic piperazine ring at a temperature of from about 80° to about 200° C., the reactants being present in amounts such that the ratio of NCO groups to NH groups is from about 4 to 1 to about 100 to 1.

3,862,974

SUBSTITUTED PHENYLTHIO-THIOLACETATE ESTERS

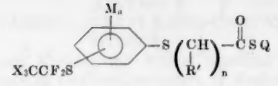
Fred Y. Edamura; Lennon H. McKendry, and Eric R. Larsen, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 111,688, Feb. 1, 1971, Pat. No. 3,709,926. This application Oct. 20, 1972, Ser. No. 299,288

Int. Cl. C07c *153/07*

U.S. Cl. 260—455 R **3 Claims**

1. A compound corresponding to the formula:



wherein

each X independently represents hydrogen, bromo, chloro or fluoro, with the proviso that at least one X is always bromo, chloro or fluoro;

each M independently represents bromo, chloro, fluoro, iodo, nitro or loweralkyl containing from one to about four carbon atoms, both inclusive;

a represents an integer of from 0 to 3, both inclusive;

each n independently represents an integer of from 1 to 5, both inclusive;

R′ represents hydrogen or loweralkyl containing from one to about four carbon atoms, both inclusive, with the proviso that when n is greater than 1, only one R′ can be loweralkyl;

Q is loweralkyl containing from one to about 1 to about 10 carbon atoms wherein Q is hydrogen with compounds wherein Q is sodium or potassium.

3,862,975

PROCESS FOR PREPARING LIQUID XANTHATE-TERMINATED POLYMERS

Alan A. Csontos, Norton, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed July 31, 1973, Ser. No. 384,208

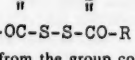
Int. Cl. C07c *154/02*

U.S. Cl. 260—455 R **8 Claims**

1. A process for preparing liquid xanthate-terminated polymers comprising polymerizing, at a temperature from about 50°C. to about 100°C., from about 2 parts to about 99 parts by weight of a partially water-soluble vinyl monomer(s) having a solubility in water of at least 0.2 part by weight in 100 parts by weight of water at 10°C. and selected from the group consisting of acrylic acid, methacrylic acid, methyl acrylate, ethyl acrylate, butyl acrylate, vinyl acetate, allyl acetate, vinyl chloride, acrylonitrile, acrylamide, allyl amine, allylalcohol, vinyl ethyl ether, diallyl ether, and ethylene with from about 1 part to about 98 parts by weight of a water insoluble vinyl monomer(s) having a solubility in water of less than 0.2 part by weight per 100 parts by weight of water at 10°C. selected from the group consisting of butadiene, isoprene, chloroprene, 1,5-hexadiene, dicyclopentadiene, ethylidene norbornene, styrene, α-methyl styrene, chlorostyrene, vinyl bromide, allyl acetone, 2-ethylhexyl acrylate, decyl acrylate, and butylene; using as a free radical catalyst a persulfate catalyst of the formula

$$M_zS_2O_8$$

wherein M is selected from the group consisting of NH_4, Na, K, Pb, and Ba, and z is 1 or 2; and conducting the polymerization in aqueous media in the presence of from about 2 parts to about 20 parts by weight per 100 parts by weight of monomer of a dixanthogen disulfide compound of the formula



wherein R is selected from the group consisting of an alkyl radical containing one to about 12 carbon atoms, a cycloalkyl radical containing four to eight carbon atoms in the ring, and an aryl or aralkyl radical containing six to about 12 carbon atoms, and in the presence of from about 0.05 part to about 0.5 part by weight per 100 parts by weight of monomer of an anionic or nonionic emulsifying agent selected from the group consisting of disproportionated tall oil resin, potassium or sodium salt of high molecular weight fatty acids, alkylphenoxy polyethyleneoxy ethanols, potassium or sodium salt of organic

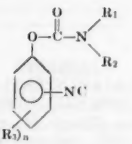
phosphate esters, sodium dioctyl sulfosuccinate, sodium alkyl sulfates, and sodium alkylaryl sulfonates.

3,862,976
ISOCYANOPHENYL CARBAMATES

David L. Booth, Crystal Lake, Ill., assignor to Morton-Norwich Products, Inc., Chicago, Ill.

Filed Aug. 1, 1972, Ser. No. 277,053
Int. Cl. C07c *119/02*
U.S. Cl. 260—465 D **10 Claims**

1. Isocyanophenyl carbamates having the general formula



in which

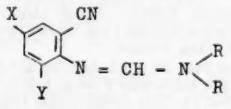
R_1 and R_2 are each hydrogen, alkyl (C_1–C_4);
R_3 is alkyl (C_1–C_6); and mixtures thereof; and
n is an integer from 1 to 3 inclusive.

3,862,977
NITRATION OF N-(2-CYANOPHENYL)-N′,N′-DIALKYLFORMAMIDINES

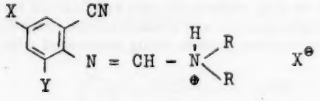
Helmut Junge, Wachenheim, and Hans-Juergen Quadbeck-Seeger, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Atkiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Jan. 22, 1973, Ser. No. 325,737
Claims priority, application Germany, Jan. 22, 1972, 2203051
Int. Cl. C07c *121/78*
U.S. Cl. 260—465 E **6 Claims**

1. A process for the production of an N-(2-cyano-4-nitrophenyl)-N′,N′-disubstituted or N-(2-cyano-6-nitrophenyl)-N′,N′-disubstituted formamidine of the formula:



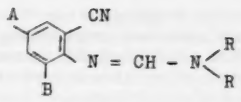
or a salt thereof of the formula:



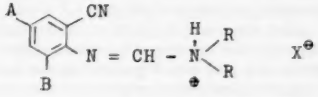
in which

X is hydrogen, chloro, bromo or nitro,
X^- is an anion selected from the group consisting of NO_3^-, SO_4^{2-}, HSO_4^-, Cl^- and $OPOCl_2^-$,
Y is chloro, bromo or nitro,
R in each case is alkyl of 1 to 4 carbon atoms and either X or Y is nitro,

which process comprises nitrating a compound of the formula:



or a salt thereof of the formula:



in which

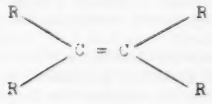
A is hydrogen, chloro or bromo; and
B is hydrogen, chloro or bromo; and either
A or B is hydrogen and
R has the meaning given above, by reaction (a) with 60 to 100 percent nitric acid at a temperature of from −20° to 100°C. or (b) with nitric acid or sodium, potassium or ammonium nitrate in at least 70 percent sulfuric acid at a temperature of from −20° to 50°C.

3,862,978
CATALYTIC SYNTHESIS OF ORGANIC HALOGEN COMPOUNDS FROM AN ETHYLENICALLY UNSATURATED COMPOUND AND A HALOGENATED ORGANIC COMPOUND

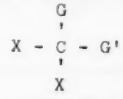
Dalton L. Decker; Carl Moore, both of Midland, Mich., and William F. Tousignant, Elm Grove, Wis., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 662,867, Aug. 24, 1967, Pat. No. 3,454,657, which is a continuation-in-part of Ser. No. 472,718, July 16, 1965, abandoned, which is a continuation-in-part of Ser. No. 255,088, Jan. 30, 1963, abandoned. This application May 1, 1969, Ser. No. 821,089
Int. Cl. C07c *121/30*
U.S. Cl. 260—465.7 **20 Claims**

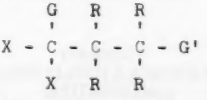
1. Method which comprises reacting an ethylenically unsaturated compound of the formula



with a halogenated compound of the formula

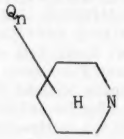


and obtaining a compound of the formula



by a process that comprises contacting together in a mixture one equivalent of said ethylenically unsaturated compound and from about 0.5 to about 20 equivalents of said halogenated compound in the presence of a catalytic amount of a catalyst system consisting essentially of at least about 0.0001 atomic equivalent of copper, as elemental copper or as a copper-containing compound, and at least about 0.00001 molecular equivalent of amine per molecular equivalent of said halogenated compound, and thereafter maintaining said

mixture at a reaction temperature of from 0° to about 200°C., said ethylenically unsaturated compound being a compound in which each R, taken individually, represents hydrogen, hydrocarbyl, halo, carboxy, chlorocarbonyl, carbamoyl, loweralkylcarbamoyl, diloweralkylcarbamoyl, loweralkoxycarbonyl, cyanomethyl or cyano, with the proviso that at least one R group is always carboxy, chlorocarbonyl, carbamoyl, loweralkylcarbamoyl, diloweralkylcarbamoyl, loweralkoxycarbonyl, cyanomethyl or cyano and, where two R groups are taken together, either when both R groups are on one carbon atom of the ethylenic unit or when each is separate carbon atoms of the ethylenic unit, said two R groups together constitute a divalent organic radical which completes a cyclic ethylenically unsaturated compound selected from the group consisting of cyclohexene, 2-norbornene, indene and 2(10)-pinene; said halogenated compound being a compound in which X represents a member selected from the group consisting of hydrogen, hydrocarbyl, halogen and, both X radicals being taken together, a divalent organic radical which completes a cycloalkylidene radical of from 3 to 6 carbon atoms; G represents halogen; and G′ represents a member selected from the group consisting of iodine, bromine and chlorine, said member being of molecular weight equal to, or greater than, the molecular weight of any halogen atom represented by G or X; and said amine compound being a member selected from the group consisting of (A) piperidine, (B) substituted piperidine of the formula



wherein each Q independently represents loweralkyl and n represents an integer of from 1 to 2, both inclusive, (C) cyclohexylamine, (D) substituted cyclohexylamine wherein the cyclohexyl radical bears from 1 to 3 substituents, each of which is independently chlorine, bromine or loweralkyl, and (E) compound of the formula

$$R' - NH - R''$$

wherein R′ represents a member selected from the group consisting of allyl, benzyl, substituted benzyl in which the cyclic moiety thereof bears from 1 to 3 substituents, each of which is independently chlorine, bromine, cyclohexyl, substituted cyclohexyl as defined hereinabove or loweralkyl; and R″ represents a member selected from the group consisting of R′ and 2-cyanoethyl.

3,862,979

9-DESOXY-PROSTA-5,9(10),13-TRIENOIC ACID DERIVATIVES

Carmelo Gandolfi; Gianfederico Doria, both of Milan, and Pietro Gaio, Belluno, all of Italy, assignors to Carlo Erba S.P.A., Milan, Italy

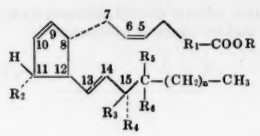
Filed June 4, 1973, Ser. No. 366,978

Claims priority, application Italy, June 15, 1972, 25672/72; Apr. 17, 1973, 23086/73

Int. Cl. C07c *61/32*

U.S. Cl. 260—514 D **4 Claims**

1. 9-desoxy-prosta-5,9(10), 13-trienoic acid derivatives having the general formula (1)



and the racemates thereof, wherein R is a hydrogen atom, a pharmaceutically acceptable cation or a C_{1-12} alkyl group; R_1 is $-CH_2-CH_2-$, or $-OCH_2-$, R_2 is a hydroxy group or an alkanoyloxy group; one of R_3 and R_4 is a hydroxy group and the other is a hydrogen atom or a C_{1-6} alkyl; R_5 and R_6, which may be the same or different, are a hydrogen atom or a C_{1-4} alkyl group; n is 3, 4 or 5.

3,862,980

4-PENTEN-2-YL 6-(4-PENTENYL-β-RESORCYLATE DIBENZYL ETHER

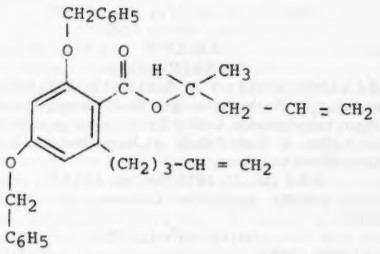
Wilbert Herbert Urry, Chicago, Ill., and Guy Towns Mullenbach, Berkeley, Calif., assignors to Commercial Solvents Corporation

Filed Apr. 25, 1972, Ser. No. 247,414

Int. Cl. C07c *69/78*

U.S. Cl. 260—473 R **1 Claim**

1. The compound 4-penten-2-yl 6-(4-pentenyl)-β-resorcylate dibenzyl ether having the formula



3,862,981

NEW LUBRICATING OIL ADDITIVES

Bernard Demoures, Puteaux; Daniel Llauro, Crepieux Le Pape, and Francois Giolito, Lyon, all of France, assignors to Rhone-Progil, Paris, France

Filed June 28, 1972, Ser. No. 267,048

Claims priority, application France, July 8, 1971, 71/26025

Int. Cl. C07c *69/00*; C01m *3/26*

U.S. Cl. 260—479 S **8 Claims**

1. An additive consisting of the ester reaction product of diphenylolpropane with an hydrocarbon substituted-succinic anhydride or acid, wherein the said hydrocarbon substituent is substantially saturated and contains at least about 30 carbon atoms, said reaction product being neutralized with a polyamine.

3,862,982

2-(OMEGO-SUBSTITUTED ALKOXY) BENZOPHENONES

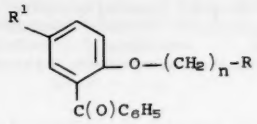
William John Welstead, Jr., Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Filed June 16, 1972, Ser. No. 263,481

Int. Cl. C07c *125/06*

U.S. Cl. 260—482 C **6 Claims**

1. A compound selected from 2-(omega-substituted alkoxy) benzophenones having the formula:



wherein;

R is selected from carbamoyloxy, N-lower-alkylcarbamoyloxy, N,N-diloweralkylcarbamoyloxy and 2-carbamoyloxy-1-hydroxyethyl,

R^1 is selected from halogen, hydrogen, alkoxy, nitro and trifluoromethyl, and

n is selected from one and two.

3,862,983

LIGHTENING THE COLOR OF OLEFIN SULFONATES

Ferdinand Von Praun, Lippramsdorf-Freiheit, and Kurt Koswig, Marl, both of Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Germany

Filed Aug. 24, 1973, Ser. No. 391,494

Claims priority, application Germany, Aug. 29, 1972, 2242391

Int. Cl. C07c *143/02*

U.S. Cl. 260—513 R **9 Claims**

1. In a process for lightening the color of colored olefin sulfonates produced by reacting longchain olefins of 8 to 22 carbon atoms with sulfur trioxide followed by alkaline hydrolysis of the reaction product, the improvement which comprises heating at about 180–300°C, at a pH of 11–14, and in a sealed vessel under pressure, a mixture of the colored olefin sulfonate, 150–900 percent by weight of water and 3–400 percent by weight of a solvent selected from the group consisting of one or more of C_5 - C_{22} paraffins, C_5 - C_{22} olefins and C_6 - C_{10} aromatic hydrocarbons, calculated on the olefin sulfonate, and, while still under pressure, separating the thus-formed supernatant solvent phase containing the colored impurities from the aqueous lower phase containing the purified olefin sulfonate.

3,862,984

15-OXO,11 βPGF$_2$ αAND β

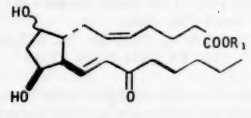
John E. Pike, and William P. Schneider, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 159,478, July 2, 1971, Pat. No. 3,772,350, which is a continuation-in-part of Ser. No. 71,390, Sept. 11, 1970, abandoned. This application Oct. 3, 1973, Ser. No. 403,093

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—514 D **5 Claims**

1. A compound of the formula:



wherein R_1 is hydrogen, alkyl of 1 to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one to 3 chloro or alkyl of one to 4 carbon atoms, inclusive, and wherein ~ indicates attachment to the ring in alpha or beta configuration.

3,862,985

RESOLUTION OF LYSINEAMIDE

Stylianos Sifniades, Parsippany; Robert Fuhrmann, Morris Plains, and Allen A. Tunick, Denville, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Division of Ser. No. 167,020, July 28, 1971, Pat. No. 3,773,786. This application Aug. 27, 1973, Ser. No. 391,100

Int. Cl. C07c *103/00*

U.S. Cl. 260—561 A **7 Claims**

1. A process for preparing L-lysineamide dihydrochloride which comprises reacting DL-lysineamide with one mol each of L-pyrrolidone carboxylic acid and hydrogen chloride per mol of lysineamide in the presence of a solvent, recovering L-lysineamide-L-pyrrolidone carboxylate hydrochloride, adding an excess of hydrogen chloride and recovering the product.

3,862,986

1-HYDRYOXYMETHYL-AMINO-2-ALKYL-OR ALLYL-2-(3'-METHOXY-PHENYL)-CHCHLOHEXANES

Joseph Hellerbach, Basel, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

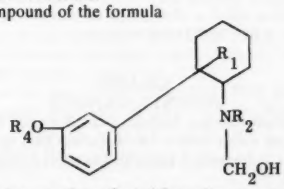
Division of Ser. No. 869,936, Oct. 27, 1969, abandoned, which is a continuation-in-part of Ser. No. 559,739, June 23, 1966, Pat. No. 3,499,901. This application Sept. 1, 1972, Ser. No. 285,950

Claims priority, application Switzerland, June 30, 1965, 9168/65

Int. Cl. C07c *91/16*

U.S. Cl. 260—570.5 CA **4 Claims**

1. A compound of the formula



wherein R_1 is a member selected from the group consisting of lower alkyl, lower cycloalkyl of 3–5 carbon atoms-substituted lower alkyl of 1–4 carbon atoms provided that the lower cycloalkyl-substituted lower alkyl contains no more than 7 carbon atoms and lower alkenyl; R_2 is a member selected from the group consisting of hydrogen and lower alkyl; and R_4 is lower alkyl.

3,862,987

PHENYL-HYDROXYPROPYL-SUBSTITUTED 1-AMINO ADAMANTANES

Ctirad Podesva, and Carola Solomon, both of Montreal, Quebec, Canada, assignors to Delmar Chemicals Limited, Ville LaSalle, Quebec, Canada

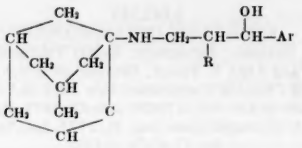
Continuation-in-part of Ser. No. 671,935, Oct. 2, 1967. This application July 24, 1973, Ser. No. 382,107

Claims priority, application Great Britain, Oct. 18, 1966, 46575/66

Int. Cl. C07c *91/22*

U.S. Cl. 260—570.6 **5 Claims**

1. A 1-aminoadamantane derivative of formula I



(I)

or a pharmaceutically acceptable acid addition salt thereof, wherein Ar represents an unsubstituted phenyl group or a mono-nitro-substituted or mono-halo-substituted or mono-lower alkoxy-substituted or mono-lower alkyl-substituted phenyl group, and R represents a hydrogen atom or a lower alkyl group.

3,862,988

4,8-DIMETHYL- 12-OXOTRIDECANAL

David M. Pond, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 23, 1974, Ser. No. 472,793
Int. Cl. C07c *49/04*
U.S. Cl. 260—593 R **1 Claim**

1. 4,8-Dimethyl-12-oxotridecanal.

3,862,989

CARBODIIMIDE CATALYSTS AND PROCESSES

Robert L. Hansen, Roseville, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed June 8, 1973, Ser. No. 368,355
Int. Cl. C07f *9/28*
U.S. Cl. 260—606.5 P **6 Claims**

1. A bicyclic terpene alkyl or hydrocarbyl aryl phosphine oxide wherein alkyl is of 1 to 10 carbon atoms and hydrocarbyl aryl is of 6 to 10 carbon atoms.

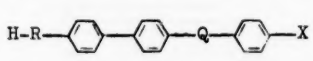
3,862,990

BIPHENYL SULFONES

Alan Branford Newton, Enfield; John Brewster Rose, Letchworth, and Victor Jeffrey Leslie, Potters Bar, all of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 186,795, Oct. 5, 1971, Pat. No. 3,764,583, which is a continuation-in-part of Ser. No. 60,101, July 31, 1970, abandoned. This application June 29, 1973, Ser. No. 374,977
Claims priority, application Great Britain, July 31, 1969, 38438/69
Int. Cl. C07c *147/10*
U.S. Cl. 260—607 A **3 Claims**

1. A halophenol of the formula



where X is a halogen atom, R is —O— or —S— and Q is $-SO_2-$, or an alkali salt thereof wherein X is halogen.

3,862,991

SULFUR-CONTAINING POLYPHENOLS

Howard A. Hageman, Southbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 13,749, Feb. 24, 1970, Pat. No. 3,686,325. This application May 8, 1972, Ser. No. 251,723
Int. Cl. C07c *149/36*
U.S. Cl. 260—608 **7 Claims**

1. A bis(beta-chloro-beta-arylalkyl)disulfide, which is made by reacting sulfur monochloride with a beta-arylolefin selected from the group consisting of styrene, alpha-methyl styrene, p-tert-butyl styrene, o-chlorostyrene, p-chlorostyrene, vinyltoluene, anethole, 1,2-dihydroanaphthalene, acenaphthalene, 1-phenylcyclohexane and indene.

3,862,992

PURIFICATION OF 2,4,4,4-TETRACHLOROBUTANOL

John S. Babiec, Jr., Orange, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Aug. 20, 1973, Ser. No. 389,493
Int. Cl. C07c *31/34, 29/24*
U.S. Cl. 260—633 **10 Claims**

1. A process for the purification of crude 2,4,4,4-tetrachlorobutanol containing high boiling impurities which comprises:
   a. dissolving said crude 2,4,4,4-tetrachlorobutanol in methanol, using about 3–100 parts of methanol per every 10 parts by weight of pure 2,4,4,4-tetrachlorobutanol,
   b. mixing with the resulting solution a proportion of water, ranging from about 0.3 to about 1.6 parts per every part by weight of pure 2,4,4,4-tetrachlorobutanol, which is sufficient to cause the mixture, upon standing, to separate into two liquid phases, namely, an upper phase containing purified 2,4,4,4-tetrachlorobutanol and a lower phase containing high boiling impurities, and
   c. recovering said purified 2,4,4,4-tetrachlorobutanol from said upper phase.

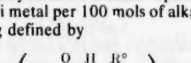
3,862,993

PROCESS FOR CONDENSATION OF ALCOHOLS

James E. Yates, and Kaye L. Motz, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed June 6, 1973, Ser. No. 367,688
Int. Cl. C07c *31/02*
U.S. Cl. 260—642 C **10 Claims**

1. A process for producing higher molecular weight hydrocarbon alcohols by condensing at least one lower molecular weight alkanol having a methylene group adjacent the hydroxylated carbon atom; said process being carried out in the liquid phase at temperatures in the range of 80°C to about 300°C in the presence of an alkali catalyst and a copper salt while simultaneously removing water as it forms; said alkali catalyst being an alkali metal, alkali metal oxide, alkali metal hydroxide, alkali metal hydrocarbon alcoholate or alkali metal bisulfite and employed in an amount equivalent to about 0.1 to 4 mols of alkali metal per 100 mols of alkanol reactant; said copper salt being defined by



wherein each R^o, independently, is a hydrocarbon group having 1 to 10 carbon atoms an employed in an amount sufficient to provide at least 1 ppm copper metal based on the alkanol reactant.

3,862,994

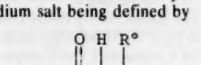
PROCESS FOR CONDENSATION OF ALCOHOLS

James E. Yates, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed June 6, 1973, Ser. No. 367,690
Int. Cl. C07c *29/00, 31/02*
U.S. Cl. 260—642 C **8 Claims**

1. A process of producing higher molecular weight hydrocarbon alcohols by condensing at least one lower molecular weight alkanol having a methylene group adjacent the hydroxylated carbon atom; said process being carried out in liquid phase at about 80° to 300°C in the presence of an alkali catalyst and a catalytic amount of a palladium salt while simultaneously removing water as it forms; said alkali catalyst being an alkali metal, alkali metal hydroxide, alkali metal oxide,

alkali metal bisulfite or alkali metal hydrocarbon alcoholate; and said palladium salt being defined by



wherein each R°, independently, is a hydrocarbon group having 1 to 10 carbon atoms.

3,862,995

MANUFACTURE OF 1,1-DIFLUOROETHANE

Guy Martens, Brussels, and Marcel Godfroid, Wavre, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Apr. 18, 1972, Ser. No. 245,191

Claims priority, application Belgium, Apr. 28, 1971, 102762

Int. Cl. C07c *17/08, 17/10, 17/20*

U.S. Cl. 200—653.6 **10 Claims**

1. A vapor-phase process for producing 1,1-difluoroethane by catalytic fluorination of vinyl chloride with hydrogen fluoride, comprising reacting vinyl chloride with hydrogen fluoride, at a reaction temperature between 100° and 400°C, in the presence of a catalyst which is catalytically active in vapor-phase fluorination of vinyl chloride with hydrogen fluoride and which is a vanadium-derivative-impregnated activated carbon, the vanadium derivative comprising tri-, tetra- or pentavalent vanadium in the form of at least one member selected from the group consisting of vanadium oxide, vanadium hydroxide, vanadium halide, vanadium oxyhalide sulfide, sulfate, nitrate, carbonate, phosphate and phosphite.

3,862,996

ETHYLENE FROM HALOGENATED HYDROCARBONS

William Q. Beard, Jr., Wichita, Kans., assignor to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 841,238, July 14, 1969, Pat. No. 3,702,311. This application Aug. 28, 1972, Ser. No. 284,335

Int. Cl. C07c *11/12*

U.S. Cl. 260—677 XA **11 Claims**

1. A process for the halodehydrogenation of ethane to yield ethylene which comprises contacting ethane with a fluidized supported catalyst, halogen and a hydrogen halide diluent at a temperature above 350°C and at a pressure above atmospheric, the catalyst comprising a copper halide or iron halide in a concentration of from about 0.15 to about 3.0 weight/percent, based on the total weight of catalyst and support.

3,862,997

OXIDATIVE DEHYDROGENATION CATALYSTS

Darrell W. Walker, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 140,970, May 6, 1971, Pat. No. 3,789,017. This application July 31, 1973, Ser. No. 384,377

Int. Cl. C07c *5/18*

U.S. Cl. 260—680 E **6 Claims**

1. A process for the oxidative dehydrogenation of paraffinic hydrocarbon feedstocks having from 2 to 12 carbon atoms which comprises contacting said feedstock in the vapor phase under dehydrogenation conditions with a catalyst consisting essentially of from 26 to about 75 weight percent of at least one ferrous metal selected from the group consisting of nickel, cobalt and iron, from about 1 to about 50 weight percent of tin and from about 0.5 to about 10 weight percent phosphorus, wherein at least one of said ferrous metal, tin or phosphorus is combined with oxygen and wherein all weight percents are based upon weight of catalyst, said catalyst being calcined and thereafter impregnated with additional tin in an amount ranging from about 0.1 to about 10 weight percent and thereafter calcined.

3,862,998

MIXTURE OF A POLYCARBONATE AND A STYRENE MALEIC ACID ANHYDRIDE COPOLYMER

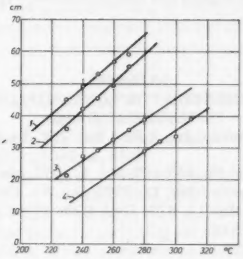
Michael Koehler, Vienna, Austria; Salah Elabd Elghani, Cologne, and Richard Prinz, Leverkusen, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 25, 1973, Ser. No. 409,409

Claims priority, application Germany, Oct. 28, 1972, 2252974

Int. Cl. C08g *39/10;* **C08f** *41/12*

U.S. Cl. 260—873 **5 Claims**



1. A thermoplastic moulding composition consisting essentially of a mixture of (a) from 5–95 percent by weight of a polycarbonate of a dihydric phenol and a derivative of carbonic acid (b) from 95 to 5 percent by weight of a copolymer of styrene and maleic acid anhydride containing from 5 to 50 percent by weight of maleic acid anhydride.

3,862,999

O'BETA ALKANE PHOSPHATES

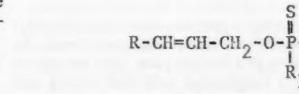
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 123,467, March 11, 1971, abandoned. This application Oct. 19, 1972, Ser. No. 298,979

Int. Cl. C07f *9/38;* **A01n** *9/36*

U.S. Cl. 260—956 **26 Claims**

1. Compounds corresponding to the formula



wherein R is selected from the group consisting of hydrogen and alkyl; R_1 is alkyl; R_2 is selected from phenyl and substituted phenyl with the substituents being selected from alkyl and halogen; X is oxygen or sulfur.

3,863,000

METHOD OF MANUFACTURING A TOUGH THERMOPLASTIC RESIN FOAM

Akira Kasai, Fujisawa; Mitsuo Inui; Nobuo Hoshino; Kenichi Hattori, all of Yokohama; Naonori Shiina, Tokyo, and Hiroyuki Nakae, Yokohama, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1972, Ser. No. 298,781

Claims priority, application Japan, Oct. 23, 1971, 46-84135

Int. Cl. B29d *27/100*

U.S. Cl. 264—45.5 **15 Claims**

1. A method of manufacturing a tough thermoplastic resin foam having a low density and large cell size which comprises a. introducing into an extruder a thermoplastic resin, 2 to 20 parts by weight of a volatile foaming agent based on 100 parts by weight of said resin and soluble in said resin at extruding

temperature and less than 3 parts by weight of a nucleating agent based on 100 parts by weight of said resin,

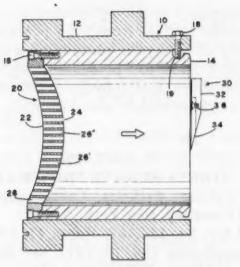
b. extruding into the atmosphere the mixture through a die orifice at a temperature between the softening or melting point of said mixture and a temperature 20°C higher than the softening or melting point of the thermoplastic resin itself, and

c. cooling slowly the extruded mixture to cause the formation of foam nuclei therein and to make cells grow more than 5 mm in average cell diameter by permitting the extruded mixture to stand in the open air or placing it in a heat transfer medium, while taking up the extruded mixture at a speed less than the extrusion speed at the die orifice.

3,863,001
EXTRUSION METHOD FOR EQUALIZING FRICTIONAL MATERIAL DRAG

Mario F. Thumudo, Jr., R.R. 1 Box 252, La Fontaine, Ind. 46540

Division of Ser. No. 295,310, Oct. 5, 1972, abandoned. This application Jan. 21, 1974, Ser. No. 435,059
Int. Cl. B29f *3/02*; B29c *17/14*
U.S. Cl. 264—148 **2 Claims**



1. In a method of making a generally flat circular transfer preform from a polymeric extrudate, including forcing the elastomeric material through a breaker plate, then through an extruder die defining a longitudinal axis, and cutting said extrudate into said preforms, the improvement comprising:

a. providing an improved breaker plate having first and second oppositely disposed surfaces, each of said surfaces generally defining a portion of a sphere, a center of curvature and a radius of curvature, said centers of curvature are both located on the upstream side of said breaker plate, said first radius of curvature is slightly longer than said second radius of curvature, said plate defines a plurality of orifices extending through said plate and covering a major portion of the surface area of said plate, said orifices have cross-sections which are substantially parallelograms and each comprises four surfaces oriented substantially parallel to said longitudinal axis, said orifices nearer the center of said plate are longer than those nearer the periphery, to compensate for the frictional drag exerted on the extrudate by the surface of said barrel;

b. forcing said extrudate through said improved breaker plate thereby forming a plurality of individual extrusions having cross-sections which are parallelograms; and

c. permitting said individual extrusions to nest together downstream from said breaker plate, in a generally cylindrical configuration.

3,863,002
STATIC LEACHING PROCESS

Gerald F. Pace, and Earl W. Shortridge, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 135,457, April 19, 1971, abandoned. This application Nov. 15, 1971, Ser. No. 199,026
Int. Cl. B01d *11/00*
U.S. Cl. 423—20 **5 Claims**

1. A static leaching process for recovering mineral values from a permeable bed of ore comprising drying said ore in an agitated state to increase permeability of said ore bed, placing said dried ore into a leaching vessel, adding a lixiviant solution to said ore to leach said mineral values from said ore under pressure sufficient to cause flow of said solution through said bed of ore, percolating said lixiviant solution through said ore to leach said mineral values from said ore, adding a sweep fluid to said ore to sweep said lixiviant containing dissolved mineral values through said bed of ore, and recovering an effluent lixiviant solution from said bed of ore containing said mineral values.

3,863,003
METHOD OF REMOVING CARBON DIOXIDE FROM GASES

Joseph H. Field, and Donald H. McCrea, both of Pittsburgh, Pa., assignors to The Benfield Corporation, Berwyn, Pa.

Filed Sept. 6, 1973, Ser. No. 394,637
Int. Cl. B01d *53/34*
U.S. Cl. 423—232 **7 Claims**

1. In a process for the removal of CO_2 from CO_2 containing gases by absorption in aqueous potassium carbonate scrubbing solutions, a method for protecting the steel surfaces in contact with said scrubbing solution from corrosive attack which comprises including in said scrubbing solutions from about .01% to 2% by weight of an alkali metal vanadate salt and from about .01% to 0.5% by weight of an alkali metal nitrite salt, such amounts being based on the total weight of the scrubbing solution.

3,863,004
DENATURED MACROPROTEIN WITH DIVALENT TIN FOR TAGGING WITH TECHNETIUM-99M AND METHOD OF PREPARATION

Robert G. Wolfangel, St. Louis, Mo., assignor to Mallinckrodt Chemical Works, St. Louis, Mo.

Filed Mar. 20, 1972, Ser. No. 236,159
Int. Cl. A61k *27/04*
U.S. Cl. 424—1 **14 Claims**

1. A composition suitable for rapid tagging with technetium-99m and use in lung scanning procedures consisting essentially of an injectable suspension in a buffer solution of particles of denatured macroprotein having divalent tin bound thereto, said macroprotein having a molecular weight of at least about 20,000.

3,863,005
DUAL ASTRINGENT COMPOSITION

Harry W. Mace, Milford, and Fred Presant, Fairfield, both of Conn., assignors to Aerosol Techniques Incorporated, Milford, Conn.

Filed Mar. 5, 1970, Ser. No. 16,764
Int. Cl. A61l *9/04*; A61k *7/00*
U.S. Cl. 424—45 **6 Claims**

1. Aerosol astringent package comprising a pressure resistant container having a dispensing means and under pressure therein an astringent composition providing both immediate and continuing astringent effectiveness when applied, said composition per 100 parts by weight consisting essentially of a solution of from 10 to 20 parts of ethanol and from 60 to 85 parts of a normally gaseous liquefied propellant per part of ethanol said propellant being resistant to water decomposition

and selected from the group consisting of dichlorodifluoromethane, dichlorotetrafluoroethane, pentafluoromonochloroethane, octafluoropropane, cyclic hexafluorodichlorobutane, propane, butane, isobutane, and pentane and mixtures thereof, at least 0.5 part of a first astringent soluble and highly astringent in alcohol but insoluble in said ethanol—propellant solution, said first astringent consisting of aluminum chlorhydroxide—propylene glycol adduct, at least 0.5 part of a second astringent soluble and highly astringent in water solution but insoluble in ethanol, said second astringent consisting of aluminum chlorhydroxide, the sum of said first and second astringents in said composition being between 1 and 12 parts to make up said 100 parts by weight, to effect upon dispensing of the composition from the container alcohol solution and activation of the first astringent as the propellant volatilizes for immediate astringent effectiveness and to effect water solution and activation of the second astringent in the applied condition as the ethanol evaporates and the second astringent is contacted with body moisture for continuing astringent effectiveness.

3,863,006

METHOD FOR DESENSITIZING TEETH

Milton Hodosh, 145 Whitemarsh St., Providence, R.I. 02906

Filed Jan. 29, 1973, Ser. No. 327,758
Int. Cl. A61k *7/16*

U.S. Cl. 424—49 **6 Claims**

1. The method of desensitizing hypersensitive dentin and cementum by applying thereto an agent, the essential ingredient of which is a nitrate of one of the following alkali metals: potassium, lithium or sodium said nitrate comprising between 1 percent and 20 percent by weight of said agent.

3,863,007

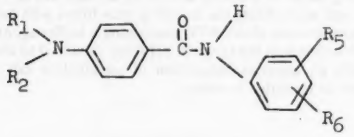
SUNSCREENING METHOD CONTAINING 4-DI(LOWER)ALKYLAMINOBENZAMIDES

Paul L. Warner, Jr., 5200 Bank St., Clarence, N.Y. 14031

Continuation-in-part of Ser. No. 145,941, May 21, 1971, abandoned. This application Mar. 28, 1974, Ser. No. 455,755
Int. Cl. A61k *9/06;* **A61l** *23/00*

U.S. Cl. 424—60 **4 Claims**

1. A method for protecting human skin from ultra-violet radiation which comprises applying to the skin to be protected an effective ultraviolet radiation-absorbing amount of a radiation-absorbing composition consisting essentially of an effective amount of dialkylaminobenzanilide of the structure



wherein R_1 and R_2 and both methyl, ethyl, or hydroxyethyl, and R_5 and R_6 are individually selected from the group consisting of hydrogen, lower alkyl, hydroxy lower alkyl, fluoro, chloro, and trifluoromethyl and an inert cosmetic vehicle for said dialkylaminobenzanilide.

3,863,008

SOMATOSTATIN AS STIMULANT OF LUTEINIZING HORMONE SECRETION

Norman H. Grant, Wynnewood, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed June 11, 1973, Ser. No. 368,557
Int. Cl. A61k *27/00;* **C07c** *103/52*

U.S. Cl. 424—177 **6 Claims**

1. A method of stimulating the release of luteinizing hormone in a mammal, which comprises administering to said mammal an effective amount for stimulating luteinizing hormone release of a material selected from the class consisting of

H-Ala-Gly-Cys-Lys-Asn-Phe-Phe-Trp-Lys-Thr-Phe-Thr-Ser-Cys-OH,

(I)

H-Ala-Gly-Cys-Lys-Asn-Phe-Phe-Trp-Lys-Thr-Phe-Thr-Ser-Cys-OH,

(II)

and the non-toxic acid addition salts thereof, said material of formula I being optionally substituted with a protecting group on the sulfhydryl moiety of each cysteinyl amino acid residue in said material of formula I, said protecting group being selected from the group consisting of benzyl, benzyloxycarbonyl, nitrobenzyl, trityl, methoxybenzyl and carboxymethyl.

3,863,009

CERTAIN GLYCINE DERIVATIVES AS POTENTIATARS FOR TETRACYCLINES

Charles Johnston, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 3, 1966, Ser. No. 583,942
Int. Cl. A61k *21/00*

U.S. Cl. 424—227 **9 Claims**

1. A method useful for increasing the blood level of a tetracycline antibiotic which comprises administering orally and essentially simultaneously to a warm-blooded animal both of (A) a tetracycline antibiotic in an amount of from 0.05 to 8 milligrams of antibiotic per kilogram of animal body weight and (B) N,N'-ethylenebis(N-(o-hydroxyphenyl)glycine) or its tetrasodium, tetrapotassium or tetraammonium salt as a potentiating agent in an amount of from 0.05 to 0.15 percent by weight, on a diet basis.

3,863,010

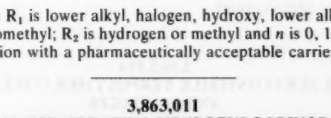
COMPOSITIONS OF MATTER AND METHOD OF USE OF PHENYL AND SUBSTITUTED PHENYL TETRAZINES

Stanley Albert Lang, Jr., Pomona; Elliott Cohen, Pearl River, and Adolph Edward Sloboda, New City, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sept. 28, 1973, Ser. No. 401,929
Int. Cl. A61k *27/00*

U.S. Cl. 424—244 **10 Claims**

1. A method of treating inflammation and pain in a warm-blooded animal which comprises administering to said warm-blooded animal an amount effective as an anti-inflammatory and anti-pain agent of a phenyltetrazine of the formula:



wherein R_1 is lower alkyl, halogen, hydroxy, lower alkoxy or trifluoromethyl; R_2 is hydrogen or methyl and n is 0, 1 or 2 in association with a pharmaceutically acceptable carrier.

3,863,011

PROCESS FOR TREATING NEUROENDOCRINOPATHIC DISEASES EMPLOYING PIMOZIDE

Alan Corbin, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed June 28, 1973, Ser. No. 374,454
Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **6 Claims**

1. A process for reducing the activity of hypothalamic hypophysiotropic hormones in the blood plasma of an endocrinopathic patient which comprises chronically administering to a patient suffering therefrom, orally or parenterally, the compound

1-1-[4,4-bis(p-fluorophenyl)butyl]-4-piperidyl-2-benzimidazolinone, in an amount sufficient to alleviate the clinical characteristics of the endocrinopathy.

3,863,012

STABILIZED OXADIAZOLE ANTHELMINTIC COMPOSITIONS

Michael H. Fisher, Somerville; George B. Smith, Edison, and Dale R. Hoff, Basking Ridge, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 14, 1972, Ser. No. 234,655
Int. Cl. A61k *27/00*
U.S. Cl. 424—272 **10 Claims**

1. A stabilized 3-loweralkyl-1,2,4-oxadiazole anthelmintic composition comprising an anthelmintically effective quantity of a 3-loweralkyl-1,2,4-oxadiazole in homogeneous mixture with from 0.5 to 2 moles of water per mole of oxadiazole.

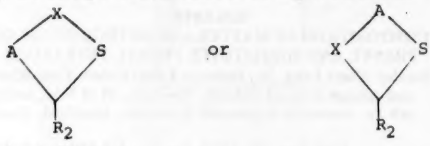
3,863,013

FLAVORING AND AROMATISING WITH A FIVE OR SIX MEMBERED HETEROCYCLIC DITHIO COMPOUND

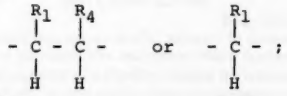
Richard A. Wilson, Edison; Cynthia Mussinan, Bricktown; Ira Katz, Elberon; Christopher Giacino, Califon; Anne Sanderson, Highlands, all of N.J., and Edward J. Shuster, Brooklyn, N.Y., assignors to International Flavors & Fragrance Inc., New York, N.Y.

Filed July 17, 1972, Ser. No. 272,396
Int. Cl. A23l *1/26*
U.S. Cl. 426—65 **8 Claims**

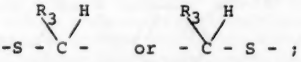
1. A process for altering the flavor or aroma of a foodstuff which comprises adding to said foodstuff a flavor or aroma effective amount of a five or six membered heterocyclic compound having two sulfur atoms in the ring of the formula



wherein X is



and A is either



and each of R_1 to R_4 is hydrogen or a lower alkyl radical of one to three carbon atoms.

3,863,014

HIGH ACRYLONITRILE TERPOLYMER CONTAINERS AND PACKAGES

Edward H. Mottus, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 8, 1972, Ser. No. 304,591
Int. Cl. B65d *5/00, 31/00, 23/00*; C08f *15/40, 17/00*
U.S. Cl. 426—106 **8 Claims**

1. An oriented molded container for food, beverages and medicines, having a tensile impact of at least 600 inch-pounds/square inch at 73°F. and an oxygen permeability of less than 10 cc./day/100 sq.in./mil-atmos. at 73°F. and water vapor transmission of less than 4.0 gms./day/100 sq.in./mil-atmos. at 73°F. and 95 percent R.H., wherein the container is the interpolymerization product of

A. from 65 to 78% by weight of acrylonitrile;
B. from 4 to 10% by weight of an alkyl vinyl ether wherein the alkyl group contains from 1 to 2 carbon atoms; and
C. from 12 to 32% by weight of styrene.

3,863,015

PROCESS FOR THE PREPARATION OF EDIBLE PROTEIN FIBERS

Hiroshi Kanda, Zushi, Japan, assignor to The Nisshin Oil Mills, Ltd., Tokyo, Japan

Filed Nov. 22, 1972, Ser. No. 308,781
Claims priority, application Japan, Dec. 29, 1971, 46-3236
Int. Cl. A23j *3/00*
U.S. Cl. 426—276 **7 Claims**

1. Process for the preparation of edible protein fibers which comprises peptizing a water dispersion of isolated soybean proteins with an alkaline material, extruding the resulting peptized solution into a coagulating bath composed of (1) an aqueous acid solution exhibiting buffer action in the pH range of from about 4.2 to about 4.6 and (2) a salt to form fibrous proteins, and immediately thereafter contacting the resulting extruded fibers with hot water at a temperature of not less than about 80°C without stretching for a period of time of from 0.5 to 10 minutes.

3,863,016

PROCESS FOR THE PREPARATION OF EDIBLE FIBERS WITH EXCELLENT MASTICABILITY

Yasumasa Yamakami, Sagamihara, Japan, assignor to The Nisshin Oil Mills, Ltd., Tokyo, Japan

Filed Nov. 22, 1972, Ser. No. 308,782
Claims priority, application Japan, Dec 29, 1971, 46-3235
Int. Cl. A23j *3/00*
U.S. Cl. 426—276 **3 Claims**

1. In the process for the preparation of edible protein fibers wherein spinning dope is produced from an alkali-peptized solution of soybean protein and said spinning dope is extruded through fine holes into an acid-salt coagulating bath and the resulting fibers are neutralized, the improvement which comprises spinning said dope in a coagulating bath having a temperature of not more than about 10°C and subjecting the spinning dope to drawing tension of at least about 150 percent, and neutralizing the resulting spun fibers with hot water at a temperature above 60°C containing a buffer agent whose buffer action is in the range of pH from about 5.0 to about 6.5 or with an aqueous suspension of an alkaline salt slightly soluble or insoluble in water.

3,863,017

SEA FOOD PRODUCTS

Mao H. Yueh, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Jan. 15, 1973, Ser. No. 323,573
Int. Cl. A23l *1/325*
U.S. Cl. 426—376 **10 Claims**

1. A method for preparing a fabricated sea food product comprising: heating fish flesh to a temperature of from 160° to 210° F. for a time sufficient to maintain the integrity of the individual fibers and working said fish to break said fish up into individual fibers to produce heat set fibers; finely comminuting uncooked fish flesh to form a heat coagulable paste; mixing said heat set fibers and said paste in a ratio of about 0.2 to 5.0 parts fibers per part paste; and heat setting the mixture.

3,863,018

METHOD OF PRODUCING AN EGG PRODUCT

Frank Shires, Chalfont St. Giles, England, assignor to Dell Foods Limited, Chalfont St. Giles, Buckinghamshire, England

Continuation-in-part of Ser. No. 178,450, Sept. 7, 1971, abandoned. This application Oct. 23, 1973, Ser. No. 408,576

Claims priority, application Great Britain, July 31, 1970, 37149/70

Int. Cl. A23l *1/32*

U.S. Cl. 426—388 **5 Claims**

1. A method for producing an egg product in an elongated container in which an elongated stick of solidified egg yolk is laterally surrounded by egg white, the steps comprising disposing a pre-formed elongated stick of solidified frozen egg yolk in an elongated container having a cross-section larger than the cross-section of said egg yolk stick, substantially filling the remaining volume of said container with liquid egg white, with the ends of said container sealed, supporting said sealed container with said solidified yolk stick and liquid egg white therein so that the major axis of said elongated container extends substantially vertically, rocking the lower end of said container through an arc not substantially longer than 2 inches and substantially centering said egg yolk stick in said container and, with said egg yolk substantially centered in said container, solidifying said egg white in said container.

3,863,019

PROCESS FOR TEXTURING A PROTEIN SLURRY

Palmer K. Strommer, Osseo, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 165,596, July 23, 1971, abandoned. This application Oct. 15, 1973, Ser. No. 406,744

Int. Cl. A23j *3/00*

U.S. Cl. 426—511 **10 Claims**

1. A method for texturizing protein material comprising:

mixing untextured protein material and water to form a slurry, said protein material containing at least 30 percent protein and comprising discrete particles of protein, said slurry containing at least about 70 percent water;

injecting the slurry into a steam flow in a confined path, said steam flow having a temperature of at least 250°F. and a pressure of at least 25 p.s.i.g., said temperature and pressure being sufficient to texturize said protein, said steam flow carrying said protein material through said confined path; and

releasing said protein material and said steam into a zone having a lower pressure;

thereby making said protein material non-dispersible, changing the discrete particles of protein into chunks having a continuous phase of protein and flashing off water from said slurry to reduce the water content of said slurry by at least 5 percent, based on the total weight of the slurry, producing a cellular structure in said chunks.

3,863,020

METHOD OF PREPARING A GROUND MEAT PATTIE FOR STORAGE AND TRANSPORTATION

John B. Robinson, Summerdale, Ala.

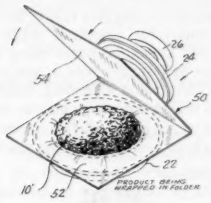
Continuation-in-part of Ser. No. 11,140, Feb. 13, 1970, abandoned. This application Nov. 30, 1973, Ser. No. 420,642

Int. Cl. A22c *7/00*

U.S. Cl. 426—513 **6 Claims**

1. The method of preparing a ground meat pattie for storing and transporting comprising the steps of:

1. separating a predetermined quantity of ground meat from a larger supply of ground raw meat, and
2. pressing a series of concentric circular ribs separated by narrow circular grooves in the top and bottom of said quantity of ground meat to form a thin round pattie having said circular concentric ribs and grooves in its upper and lower surfaces, whereby said pattie is strengthened to withstand stresses in handling, storage, transporting and ultimate cooking.

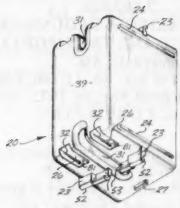


3,863,021

MOLDED ELECTRICAL JUNCTION BOX

Edgar C. Schindler, Seattle, and John C. McEachron, Tacoma, both of Wash., assignors to Nelco Corporation, Kent, Wash.

Division of Ser. No. 69,266, Sept. 3, 1970, Pat. No. 3,701,451.
This application June 22, 1972, Ser. No. 265,341
Int. Cl. H02g *3/08*
U.S. Cl. 174—53 7 Claims



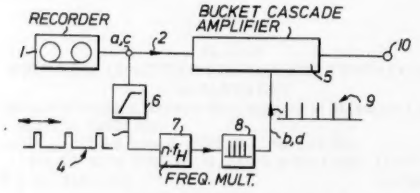
1. Knockout port structure and knockout means associated therewith for use in a molded electrical outlet box, junction box or the like having a wall member through which said port extends, comprising a port extending through said wall, the peripheral edge of said wall bounding said port including a recessed region formed therein, a projecting face region formed in said edge extending radially inward beyond said recessed region, said projecting face region having a relatively smooth surface, removable knockout means substantially closing said port, said knockout means being attached along said recessed region by frangible means, said smooth surface of said projecting face region extending radially inward beyond said recessed region a distance greater than the inward radial projection of jagged edges which may result from breaking away said knockout means along said recessed region.

3,863,022

TELEVISION SIGNAL CLOCKED DELAY LINE FOR DELAY BY AN INTEGER NUMBER OF HORIZONTAL SCANNING LINES DRIVEN BY A PILOT SIGNAL

Walter Bruch, Hannover, Germany, assignor to TED Bildplatten Aktiengesellschaft, AEG-Telefunken, TELDEC, Zug, Switzerland

Filed May 8, 1972, Ser. No. 251,229
Claims priority, application Germany, May 7, 1971, 2122593; Apr. 6, 1972, 2216519
Int. Cl. H04n *9/00, 5/76*
U.S. Cl. 358—8 7 Claims



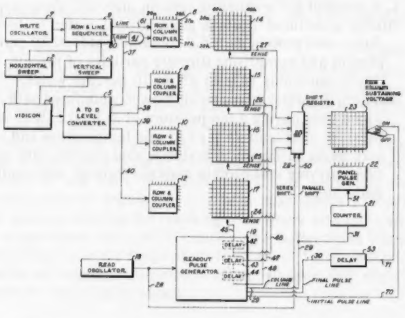
1. In a circuit for delaying, by an integral number of line scanning periods, a recorded video signal being played back from a video recorder whose output speed is subjected to fluctuation in the duration of a line scanning period, and including a memory composed of a plurality of memory elements and arranged to store the signal representing one video picture line at a time, with each memory element storing a respective segment of such picture line signal, means for connecting the input of said memory to the output of said recorder, and clock pulse generator means connected to the memory for producing a train of clock pulses during each line scanning period, each pulse causing the signal segment stored in a respective element during a preceding line scanning period to be read out, the improvement comprising circuit means connected between said recorder and said clock pulse generator means for receiving a component of said video signal for detecting the actual, presently existing line period duration of said signal and for controlling the frequency of said clock pulse generator means such that the number of pulses in the train of clock pulses per line scanning period of the video signal is substantially constant and the clock pulses have a repetition rate directly proportional to the duration of the actual, presently existing line scanning period, and for thereby causing the delay produced by said memory to always correspond to said existing line scanning period of the video signal applied to said memory and derived from said recorder whereby any fluctuation in the speed of said video recorder and in the line scanning period may be instantly compensated for.

3,863,023

METHOD AND APPARATUS FOR GENERATION OF GRAY SCALE IN GASEOUS DISCHARGE PANEL USING MULTIPLE MEMORY PLANES

Larry J. Schmersal; Theodore C. Baker, and Ellsworth M. Murley, all of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 28, 1973, Ser. No. 336,599
Int. Cl. H04n *5/70*
U.S. Cl. 178—6 4 Claims



1. A system for producing a gray scale in cross conductor gas discharge and display panel having a plurality of crossing areas which correspond to a plurality of display and storage areas comprising,

means for scanning an image field and generating an image signal corresponding thereto,

a plurality of separate storage means for storing signals corresponding to each of a plurality of gray level ranges from a brightest range to a dimmest range,

each of said storage means having at least as many discrete storage positions as said panel has crossing areas, said positions in each of said storage means being in geometrical correspondence with the positions of said crossing areas in said panel,

means for routing signals derived from said image signal to different ones of said storage means dependent on the amplitude of said image signal in synchronism with the scanning of said field so that said signals derived from image signals within each amplitude range which corre-

sponds to a different gray level are stored in the storage means corresponding to that gray level at positions which correspond to their position in said scanning field,

means for sequentially exciting said panel with signals corresponding to the signals stored in each of said storage means beginning with signals from said storage means corresponding to said brightest range and ending with signals from said storage means corresponding to said dimmest range so that the crossing areas corresponding to the storage positions which stored signals therein are excited, said means for sequentially exciting including means for exciting the panel with signals corresponding to all stored signals in a storage means before the panel is excited with signals from the storage means corresponding to the next dimmest gray level and also including delay means of arbitrary delay time controlling the delay between excitation of the panel with signals from one storage means and with signals from the next storage means,

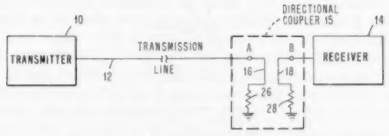
and means for extinguishing the entire panel at the same time, said panel remaining in the excited state until extinguished, whereby said signals corresponding to each gray level range cause said panel to be excited for a longer period of time than the signals from each dimmer gray level range, thereby producing said gray scale.

3,863,024

DIRECTIONAL COUPLED DATA TRANSMISSION SYSTEM

Edward S. Caragliano, and Howard H. Nick, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1973, Ser. No. 427,768
Int. Cl. H04l *11/00*
U.S. Cl. 178—68 **11 Claims**



1. In a data transmission system having a transmitter and receiver connected through a transmission line for conveying encoded data bits of information the combination of:

directional coupling means located in said transmission line and an encoding means for generating the data bits of information which when coupled through said directional coupling means produces a coupled signal having a substantially fixed width regardless of the length of transmission line traversed and a height which diminishes comparatively slowly with transmission line length traversed;

said directional coupling means having a coupling coefficient of at least 0.5 and having an electrical length which is substantially equivalent to one quarter of a bit length;

said encoding means for the data bits of information generating at least one of the encoded bits identified by a full cycle signal having an equal positive and negative excursion.

3,863,025

DATA TRANSMISSION METHOD

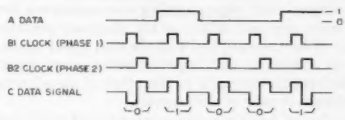
Leonard E. Gonsewski, Mount Prospect, and Paul U. Lind, Lombard, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 25, 1973, Ser. No. 354,280
Int. Cl. H04l *3/00*
U.S. Cl. 178—69.5 R **10 Claims**

1. A data communication method including the transmitting of data signals of first and second values and simultaneously transmitting synchronizing pulses of at least two different phases, and the receiving of said transmission, comprising the steps of:

combining a pair of synchronizing pulses of first and second phases with each data signal of said first value;

generating a pair of consecutive output pulses, the first pulse of a first polarity and the second pulse of a second polarity, in response to each combination of a pair of synchronizing signals with a data signal of said first value, each of said generated pairs of output pulses representative of a data signal of said first value, said first pulse representative of a synchronizing pulse of said first phase, and said second pulse representative of a synchronizing pulse of said second phase;



combining a pair of synchronizing pulses of first and second phases with each data signal of said second value;

generating a pair of consecutive output pulses the first of said second polarity and the second of said first polarity in response to each combination of a pair of synchronizing pulses with a data signal of said second value, each of said generated pairs of output pulses representative of a data signal of said second value, said first pulse representative of a synchronizing pulse of said first phase, and said second pulse representative of a synchronizing pulse of said second phase;

coupling said generated output pulses to a transmission medium;

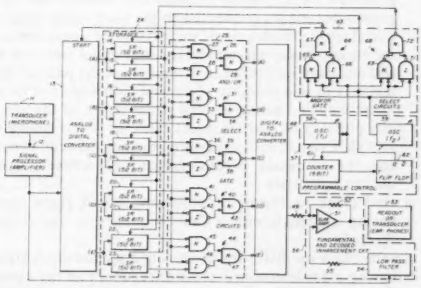
receiving said output pulses from said transmission medium.

3,863,026

HELIUM SPEECH DECODER

Clell A. Dildy, Jr., Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 15, 1973, Ser. No. 388,713
Int. Cl. G10l *1/00*
U.S. Cl. 179—1 SH **2 Claims**



1. A data signal decoder, comprising in combination: means for receiving and transducing a predetermined data signal into an electrical analog signal that is proportional thereto;

means having a data signal input, a start signal input, and a plurality of outputs, with the data signal input thereof effectively connected to the output of said receiving and transducing means for converting said electrical analog signal into a digital word signal represented by a plurality of bits respectively available at the aforesaid plurality of

outputs thereof in response to a predetermined start signal supplied to the start signal input thereof;

a plurality of pairs of shift registers, each pair of shift registers of which include an odd numbered shift register and an even numbered shift register, each shift register of which has a data signal input, a shift signal input, and a data signal output, with the odd and even numbered shift registers of each pair of shift registers of said plurality of pairs of shift registers having their data signal inputs interconnected and respectively connected to the plurality of outputs of said analog-to-digital signal converting means in such manner as to timely receive and store said plurality of bits therein in response to a predetermined pair of shift signals respectively supplied to the shift signal inputs thereof, with the shift signal inputs of said odd numbered shift registers being interconnected for simultaneous response to one of the aforesaid predetermined pair of shift signals, and with the shift signal inputs of said even numbered shift registers being interconnected for simultaneous response to the other of the aforesaid predetermined pair of shift signals;

a plurality of And/Or select gates, each of which has a pair of data signal inputs, a pair of interconnected gating control signal inputs, and a data signal output, with the pairs of data signal inputs of each And/Or select gate thereof respectively connected to the outputs of the odd and even numbered shift registers of each pair of shift registers of said plurality of pairs of shift registers for timely passing therethrough the bits stored in said odd and even numbered shift registers in response to a predetermined programmed gating control signal supplied to the interconnected gating control signal inputs thereof;

means having a plurality of inputs responsive to a digital word signal that contains the same number of bits as the number of inputs thereof respectively connected to the data signal outputs of said plurality of And/Or select gates for converting the digital word signal received therefrom into an electrical analog signal that is proportional thereto; and

programmable means connected to the start signal input of said electrical analog signal to digital word signal converting means, to the interconnected shift signal inputs of the odd and even numbered shift registers of the pairs of shift registers of said plurality of pairs of shift registers, to the interconnected gating control signal inputs of the afroresaid plurality of And/Or select gates for timely supplying said start signal, said predetermined pair of shift signals, and the aforesaid predetermined programmed signal thereto respectively, wherein said programmable means connected to the start signal input of said electrical analog signal to digital word signal converting means, to the interconnected shift signal inputs of the odd and even numbered shift registers of the pairs of shift registers of said plurality of pairs of shift registers, to the interconnected gating control signal inputs of the aforesaid plurality of And/Or select gates for timely supplying said start signal, said predetermined pair of shift signals, and the aforesaid predetermined programmed signal thereto comprises:

a read clock oscillator for producing a first clock signal having a predetermined first frequency at the output thereof;

a write clock oscillator for producing a second clock signal having a predetermined second frequency at the output thereof, with the output thereof connected to the start signal input of the aforesaid electrical analog signal to digital word signal converting means;

a counter connected to the output of said read clock oscillator;

a flip-flop having a toggle input, a Q output, and a Q output, with the toggle input thereof connected to the output of said counter, and with the Q output thereof connected to the interconnected gating inputs of the aforesaid plurality of And/Or select gates;

another And/Or select gate having a pair of data signal inputs, a pair of interconnected gating control signal inputs, and an output with one of the data signal inputs thereof connected to the output of said write clock oscillator, with the other data signal input thereof connected to the output of said read clock oscillator, with the interconnected gating control signal inputs thereof connected to the Q output of said flip-flop, and with the output thereof connected to the interconnected shift signal inputs of the aforesaid odd numbered shift registers; and

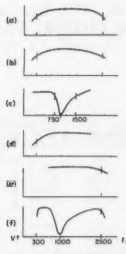
still another And/Or select gate having a pair of data signal inputs, a pair of interconnected gating control signal inputs, and an output, with one of the data signal control inputs thereof connected to the output of said read clock oscillator, with the other data signal input thereof connected to the output of said write clock oscillator, with the interconnected gating control signal inputs thereof connected to the Q output of said flip-flop, and with the output thereof connected to the interconnected shift signal inputs of the aforesaid even numbered shift registers.

3,863,027

HYDROSONIC DIVING COMMUNICATION AMPLIFIER SYSTEM

Robert S. Acks, 3369 Kearny Villa Rd., San Diego, Calif. 92132

Filed Feb. 25, 1971, Ser. No. 118,720
Int. Cl. H04m *9/00*
U.S. Cl. 179—1 D **3 Claims**



1. In a diving system having gas-flow noise as gas is fed to a diver, an improvement is provided for reducing the electronically communicated level of said gas-flow noise from a microphone to a remote speaker comprising:

means for preamplifying the composite signals composed of gas-flow noise and audio communications coupled to said microphone;

means for filtering the preamplified composite signals coupled to the preamplifying means to define a passband between 300 and 2,500 Hz;

a long conductor reaching from the filtering means tending to distort the composite signal passband;

means for selectively varying the magnitude of said composite signals coupled to said long conductor;

a bandpass filter section connected to the selectively varying means and having the same lower and upper limits as the filtering means for enhancing the lower and upper roll-off rates and to reduce the transfer of distortion attributed to said long conductor;

a band elimination notch filter section coupled to receive said composite signals within said passband, being formed of discrete components for attenuating a narrow-band concentration of said gas-flow noise centered on a predetermined noise frequency along with a narrow band portion of said audio communication while passing signals representative of intelligible audio communications to said speaker; and

means for amplifying the attenuated composite signal to pass the signals representative of intelligible audio communications to said speaker, the amplifying means being coupled between the notch filter section and the speaker.

3,863,028

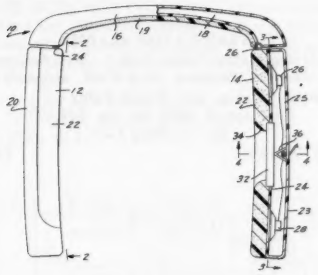
STEREOPHONIC TRANSDUCER ARRANGEMENT

Jon S. Fixler, Philadelphia, Pa., assignor to Industrial Patent Development Corp., Philadelphia, Pa.

Continuation of Ser. No. 43,903, June 5, 1970, abandoned, which is a continuation-in-part of Ser. No. 20,680, March 18, 1970, Pat. No. 3,609,240. This application Feb. 28, 1972, Ser. No. 230,147

Int. Cl. H04r *5/00*

U.S. Cl. 179—1 GQ **13 Claims**



1. Stereophonic headphones for a four channel system comprising a support, first and second enclosures to be positioned over the ears of a listener carried by said support, each of said enclosures including an inside wall to lie adjacent an ear and an outside wall spaced outwardly from said inside wall, said inside walls having an opening for the emission of sound into the ear of the listener, two audio transducers in each of said enclosures for transducing electronic signals into sound, each of said audio transducers being supported in said enclosure laterally displaced with respect to each other, said support being adapted to position said first and second enclosures over the ear of the listener with said transducers being in a front to back relation with respect to the head of the listener, and baffle means interposed between said audio transducers in each of said enclosures to provide stereo sound separation between each transducer within each of said enclosures.

12. Stereophonic headphone assembly comprising:

a. first and second enclosures,

b. at least two transducers in each enclosure,

c. a plurality of means for applying signals to respective ones of said transducers, and

d. means for coupling the signal in at least one of said (c) means to another one thereof.

3,863,029

TAPE POSITION INDICATOR MEANS FOR TELEPHONE ANSWERING APPARATUS

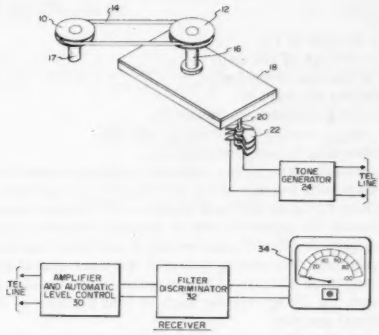
Joseph J. Zimmermann, Elm Grove, Wis., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Aug. 3, 1973, Ser. No. 385,520

Int. Cl. H04m *11/00*

U.S. Cl. 179—6 E **5 Claims**

1. In telephone answering apparatus coupled to a telephone line and including a recorder having a tape for recording messages from the telephone line and a reproducer to transmit the recorded messages to the telephone line, said tape being stored on tape reels, comprising a tone generator including means for varying the frequency of the output tone signals thereof coupled to said telephone line, said means for varying the frequency of the output tone signals of said tone generator being coupled to and operated by the rotation of one of said tape reels, a remotely located control unit including circuit means responsive to said tone signals, said circuit means being broadly tuned to a point slightly above the highest frequency



tone signal provided by said tone generator and providing voltage outputs corresponding to the frequencies of said tone signals coupled thereto, and a meter coupled to said circuit means calibrated in accordance with said voltage outputs to provide a visual indication of the position of said tape on said tape reels on said telephone answering apparatus.

3,863,030

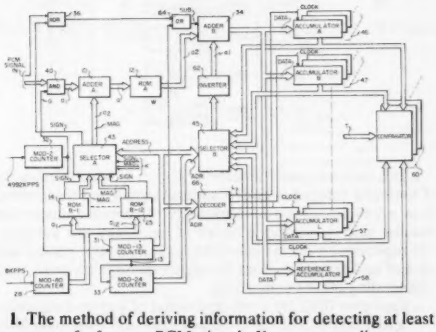
PCM TONE RECEIVER USING DIGITAL SPECTRUM ANALYSIS

Jeffrey P. Mills, Forest Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Continuation-in-part of Ser. No. 258,799, June 1, 1972, abandoned. This application Nov. 24, 1972, Ser. No. 309,020

Int. Cl. H04j *3/12*

U.S. Cl. 179—15 BY **16 Claims**



1. The method of deriving information for detecting at least one tone, f_1, from a PCM signal, V_c, corresponding to an original analog signal, V_a, comprising the steps of:

sequentially providing one of a plurality of samples of said PCM signal during a discrete time interval from $t=1$ to $t=n$;

automatically evaluating said sequential samples of said PCM signal, V_c, during said time interval using the expression:

$$V_f=\sum_{t=1}^{n} S\cdot[S'\cdot(256^{|V_a|+\log_{256}|\cos 2\pi ft|}-256^{\log_{256}|\cos 2\pi ft|})$$
$$+jS''(256^{|V_a|+\log_{256}|\sin 2\pi ft|}-256^{\log_{256}|\sin 2\pi ft|})$$

where

S is the sign of V_a;

S' is the sign of cos $2\pi ft$;

S'' is the sign of sin $2\pi ft$;

including the steps of,

providing reference quantities S',

S'', $\log_{256}$ cos $2\pi ft$ and $\log_{256}$ sin $2\pi ft$

corresponding to said tone signal, f_1;

sequentially determining with said reference quantities the magnitude and sign of the real part of said expression, V_f, (Real V_f) for each of said plurality of PCM signal samples;

storing the algebraic sum of said last mentioned signed magnitude (Real V_f) at the end of said time interval;

sequentially determining with said reference quantities the magnitude and sign of the imaginary part of said expression, V_f, (Imag. V_f) for each of said plurality of PCM signal samples;

storing the algebraic sum of said last mentioned signed magnitude (Imag. V_f) at the end of said time interval;

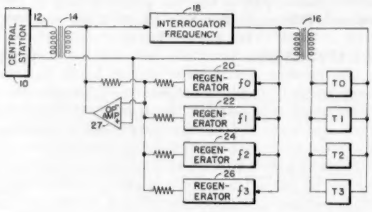
the magnitude of the complex number represented by said stored algebraic sums corresponding to Real V_f and Imag. V_f being proportional to the magnitude of said tone signal, f_1 present in said original analog signal.

3,863,031

SIGNAL REGENERATOR

Charles W. Cook, Huntsville, Ala., assignor to Avco Corporation, Huntsville, Ala.

Filed May 10, 1973, Ser. No. 358,863
Int. Cl. H04j 9/00
U.S. Cl. 179—15 BM **5 Claims**



1. In a two-way communications system in which a plurality of time and frequency coded address signals are transmitted from a control station to a plurality of remote transponder stations, said signals being coded in frequency and duration, and regenerating means intermediate said central station and each of said remote stations for regenerating said signals, said regenerating means comprising:

a band-pass filter for a selected signal of a given frequency;

a first limiter, the signal output from said band-pass filter being applied to the input circuit of said limiter;

means for providing a variable threshold for said first limiter, said means including a variable threshold circuit having an input supplied with said signal output from said band-pass filter and having a direct voltage output proportional to the amplitude of said signal output whereby the signal output from said limiter has a duration which is precisely equal to the duration of said input signal;

a clipper for said signal for establishing a predetermined amplitude level for said signal output;

a peaking circuit tuned to the frequency of said selected signal, said peaking circuit being supplied with the output from said clipper;

a second limiter, the signal output from said peaking circuit being applied to said second limiter;

a normally disabled AND gate having first and second input terminals and an output terminal, the signal output from said second limiter being applied to said first terminal;

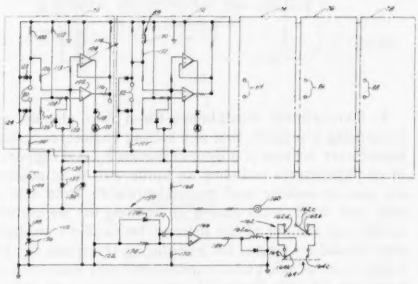
an envelope detector, the output of said envelope detector being applied to said second terminal for enabling said AND gate, the output from said peaking circuit being applied to said envelope detector for developing an enabling output pulse for said gate, said pulse having a duration equal to that of the selected signal.

3,863,032

TRANSLATOR ALARM

Orrin B. O'Dea, Garden Grove; Luis A. Arce, Lakewood, and Ralph Morrison, Pasadena, all of Calif., assignors to Communication Mfg. Co., Long Beach, Calif.

Filed Apr. 6, 1973, Ser. No. 348,477
Int. Cl. H04q 3/47
U.S. Cl. 179—18 ET **11 Claims**



1. A detecting apparatus for detecting erroneous electrical connections between any pair of matrix terminals and between different pairs of matrix terminals in a matrix, the apparatus comprising:

a. a plurality of terminal pairs;

b. a source of potential having first and second sides;

c. first impedance means, for each terminal of each terminal pair, coupled between the corresponding terminal and one side of said source;

d. second impedance means, for each terminal of each terminal pair, coupled between the corresponding terminal and the other side of said source;

e. the value of the impedances of the impedance means varying from terminal pair to terminal pair so as to cause a signal on at least one terminal of each terminal pair, the signals forming a series of cascaded signals from terminal pair to terminal pair when current flows between terminal pairs through the impedance means;

f. first signal detecting means for each terminal pair having separate inputs coupled to each terminal of the corresponding terminal pair and an output, each of the first signal detecting means being responsive to a first signal between the terminals of the corresponding terminal pair for providing at said output a reference output signal having a predetermined relation to the cascaded signal on the at least one terminal of the corresponding terminal pair and being responsive to an altered signal between the terminals of the corresponding terminal pair for providing at said output a changed output signal; and

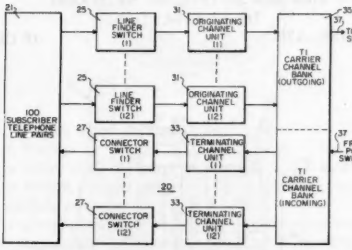
g. second signal detecting means for each terminal pair having one input coupled to receive signals on the at least one terminal of the corresponding terminal pair and a second input coupled to receive signals at the output of the first signal detecting means which is coupled to the corresponding terminal pair, the second signal detecting means being adapted for providing a first output signal responsive to the combination of the presence of said cascaded signal on the corresponding terminal pair and the reference signal and adapted for providing a second output signal responsive to an altered signal on the at least one terminal of the corresponding terminal pair, relative to the reference signal thereto, or responsive to the changed signal from the first signal detecting means.

3,863,033

STEP-BY-STEP TELEPHONE CENTRAL EXCHANGES FOR USE WITH PCM COMMUNICATION NETWORKS

Chungmin Chen, Elmhurst; Michael J. Kelly, Melrose Park, and Bernard J. Rekiere, Addison, all of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 30, 1973, Ser. No. 356,003
Int. Cl. H04j *3/00*
U.S. Cl. 179—18 FC **4 Claims**



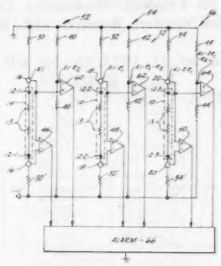
1. An improved telephone communication exchange for linking subscriber lines with a PCM switching system comprising a preselected matrix of subscriber line pairs, line finder switching means operative to connect to an originating one of said subscriber line pairs, originating loop channel unit means directly connected to said line finder switching means for converting analog signals to logic level information, PCM channel means connected to receive said logic level information and including outgoing and incoming time multiplexed carrier mediums, terminating loop channel unit means connected to said PCM channel means for reconverting said logic level information to said analog signals, and connector switching means directly connected to said terminating channel means and operative to electricity connect to a terminating one of said subscriber line pairs for completing a call through said PCM switching system: said line finder switching means includes a vertical stepping magnet assembly, a rotary stepping magnet assembly, first counter circuit means including first voltage firing means for activating said first counter circuit means connected to said vertical magnet assembly, second counter circuit means including second voltage firing means for activating said second counter circuit means connected to said rotary magnet assembly, decode and dual tone selection circuit means connected to receive output signals from said first and second counter circuit means, respectively, for providing output signals to said PCM switching system containing subscriber identification, tone generator means connected to said decode and dual tone selection circuit means for providing predetermined dual tones thereto when said output signals from said first and second counter means are received, and means for selectively connecting the output signals of said first and second counter mean to said decode and dual tone selection circuit means and for selectively connecting the output signals of said selection circuit means to said PCM switching system.

3,863,034

TRANSLATOR ALARM

Ralph Morrison, Pasadena, Calif., assignor to Communication Mfg. Co., Long Beach, Calif.

Filed Apr. 6, 1973, Ser. No. 348,476
Int. Cl. H04q *3/47*
U.S. Cl. 179—18 ET **18 Claims**



8. A detecting apparatus for erroneous electrical connections between any pair of terminals and between different pairs of terminals of a matrix, the apparatus comprising:

a. a plurality of pairs of terminals;

b. means for applying an electrical signal between each said terminal pair and ana electrical signal on at least one terminal of each terminal pair which forms cascaded signals from terminal pair to terminal pair;

c. means, for each terminal pair, for sensing a preselected signal existing between the corresponding terminal pair; and

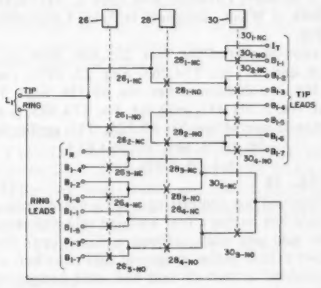
d. means, for each terminal pair, for sensing a preselected signal on the at least one terminal of the corresponding terminal pair.

3,863,035

CALL CONCENTRATOR SWITCHING MATRIX

Clarence A. Lovell, McLean, Va., assignor to Lynch Communication Systems, Inc., San Francisco, Calif.

Filed June 20, 1972, Ser. No. 264,517
Int. Cl. H04q *3/60*
U.S. Cl. 179—18 FC **9 Claims**



8. The method of connecting s telephone subscriber lines to *t* trunk lines, *t* being substantially smaller than *s*, comprising the steps of:

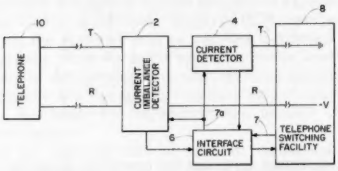
a. grouping said subscriber lines into n subscriber line boards, *n* being substantially smaller than *t*;

b. grouping said subscriber lines into n trunk line boards;
c. linking said subscriber line boards to said trunk line boards by only n^2 interconnecting links;
d. selectively connecting each subscriber line going off-hook on a given subscriber line board to a separate trunk line board through any interconnecting link connected to said given subscriber line board and not in use.

3,863,036
TELEPHONE SUBSCRIBER LOOP GROUND CURRENT DETECTION CIRCUIT

John Anthony Mc Crudden, Mississauga, Ontario, Canada, assignor to Bell-Northern Research Ltd., Ottawa, Ontario, Canada

Filed Oct. 11, 1973, Ser. No. 405,445
Int. Cl. H04q *3/74*
U.S. Cl. 179—17 A **3 Claims**



1. A circuit for indicating a ground current condition at the subscriber's end of an operating telephone subscriber's loop circuit terminated at battery and ground connections in a telephone switching facility, said indication being provided to the telephone switching facility, the circuit comprising:

first means for detecting a current flow imbalance of at least a predetermined magnitude between tip and ring leads of the loop circuit, the detection indicating a ground current condition in said loop circuit exceeding a first limit;

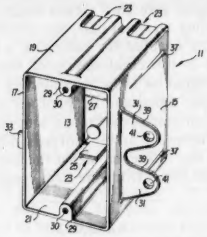
second means for detecting a current flow of at least a predetermined magnitude in the end of the loop circuit terminated at the ground connection, absence of detection by the second means in the presence of detection by the first means indicating a ground current condition in said loop circuit exceeding a second limit greater than the first limit.

3,863,037
ELECTRICAL BOX HANGER STRUCTURE

Edgar C. Schindler, Puyallup, and John C. McEachron, Tacoma, both of Wash., assignors to Nelco Corporation, Orting, Wash.

Continuation-in-part of Ser. Nos. 265,300, June 22, 1972, abandoned, and Ser. No. 174,065, Aug. 23, 1971, , said Ser. No. 265,300, is a division of Ser. No. 69,226, Sept. 3, 1970, Pat. No. 3,701,451, said Ser. No. 174,065, is a continuation-in-part of Ser. No. 69,226,. This application July 30, 1973, Ser. No. 384,053
Int. Cl. H02g *3/12*
U.S. Cl. 174—58 **15 Claims**

1. An electrical box comprising a box molded from a plastic material, said box having a rear wall and side walls that define a chamber, said side walls defining a planar open front wall which allows access to the interior of said chamber, a hanger structure molded as part of said box, said hanger structure comprising planar ear means extending outwardly from one of said side walls and integrally molded therewith, said planar ear means lying in a plane parallel to and spaced apart rearwardly from the plane of said open front wall, including a ridge projecting normally from said planar ear means integrally formed about the periphery of said planar ear means on the side thereof nearest said open front wall of said box, apertures in said planar ear means, and integral raised ridges located about the peripheries of said apertures in said planar ear means

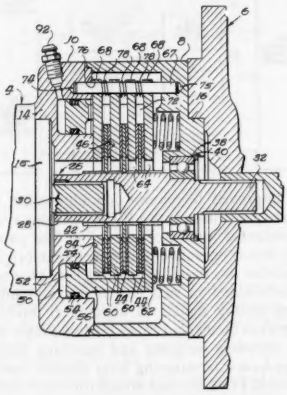


projecting normal thereto from the opposite side of said planar ear means nearest the rear wall of said box.

3,863,038
DISC BRAKE

Charles A. Kreitner, Benton Harbor, Mich., and George H. Morgan, South Bend, Ind., assignors to Lambert Brake Corporation, St. Joseph, Mo.

Filed June 26, 1973, Ser. No. 373,631
Int. Cl. F16d *65/24*
U.S. Cl. 188—170 **10 Claims**



1. A brake comprising a rotor having means for coupling to a shaft, a plurality of rotor discs, cooperating means on said discs and said rotor for mounting the rotor discs on the rotor for rotation therewith but permitting axially sliding movement of the rotor discs relative to said rotor, a stator including a housing that receives said rotor and said rotor discs, a plurality of stator discs in said housing and being interleaved with said rotor discs, said rotor discs and said stator discs comprising a disc assembly that has a primary stator disc, an abutment in said housing, spring means interposed between said primary stator disc and a part of said housing for biasing said disc assembly against said abutment when the brake is engaged, a piston in said housing and having an annular skirt engaging said primary stator disc and being in surrounding relation to the rotor discs, said piston skirt having at least one axial slot, torque pin means radially outwardly of said skirt and attached to said housing, a plurality of said stator discs projecting through said slot for engagement with said torque pin means such that the stator discs are axially slidable on said torque pin means but are retained non-rotatably in said housing, said piston being axially movable upon application of fluid pres-

sure thereto to shift said primary stator disc away from said abutment and in opposition to said means, thereby to release said brake.

3,863,039

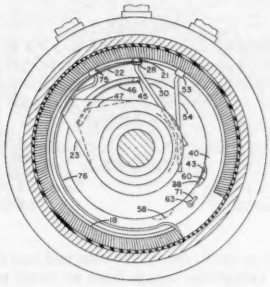
COMBINED POTENTIOMETER AND SWITCHING STRUCTURE

Charles M. Tygard, and James H. Cameron, both of West Covina, Calif., assignors to Spectrol Electronics Corporation, City of Industry, Calif.

Division of Ser. No. 54,045, June 1, 1970, Pat. No. 3,679,848, which is a division of Ser. No. 828,617, May 28, 1969, Pat. No. 3,585,562. This application Jan. 12, 1973, Ser. No. 323,188

Int. Cl. H01h *19/58*

U.S. Cl. 200—8 A **1 Claim**



1. A switch assembly comprising:

1. a casing;
2. a rotary shaft mounted for rotation within said casing;
3. a switch module secured with said casing, said switch module comprising:
   a. a non-conductive mounting ring mounted coaxially in said casing and having an annular rib extending radially inwardly from the inner surface thereof, said rib having an axially extending locating aperture therein;
   b. a first annular metallic switch ring disposed in said mounting ring on one side of said annular rib, said first switch ring having an axially extending aperture formed therein which is aligned with said aperture in the annular rib of the mounting during assembly therewith;
   c. a second annular metallic switch ring disposed in said mounting ring on the other side of said annular rib, said second annular metallic switch ring having an axially extending aperture formed therein which is aligned with said aperture in the annular rib of the mounting ring during assembly therewith;
   d. each of said annular switch rings having a relieved portion formed on the inner surface thereof which is positioned in a predetermined relationship with the relieved portion of the other switch ring by alignment of said axially extending apertures;
4. a first switch terminal having an electrical conductor extending therefrom through the aligned axial apertures in one of said switch rings and said annular rib, said electrical conductor extending into the aperture in the other of said switch rings and being secured in electrical contact therewith;
5. a second switch terminal having an electrical conductor extending therefrom into electrical contact with said one switch ring; and
6. a spring biased wiper contact carried by said rotary shaft, said wiper contact being biased into engagement with the unrelieved portion of the annular inner surface of both of said switch rings for electrical contact therewith, and a collector terminal having conductor means in electrical engagement with said collector member for making electrical contact with the collector member, whereby rotation of said rotary shaft selectively makes and breaks electrical connection between said collector terminal and said first and second switch terminals in accordance with the preselected phase relation between said switch rings.

3,863,040

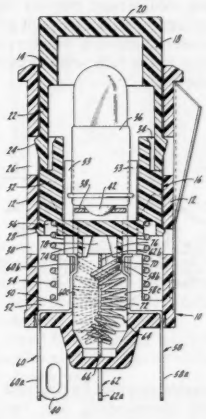
SWITCH MECHANISM

Peter J. Van Benschoten, Rancho Santa Fe, and Jan Albert Kilsdonk, Corona, both of Calif., assignors to Oak Industries Inc., Crystal Lake, Ill.

Filed Feb. 14, 1974, Ser. No. 442,479

Int. Cl. H01h *13/28*

U.S. Cl. 200—67 DB **14 Claims**



1. In a switching mechanism, a housing, at least two terminals partly positioned within said housing, an actuator mounted for reciprocal movement within said housing, return spring means positioned within said housing and normally biasing said actuator outwardly of said housing,

and coil spring means pivotally mounted under endwise buckling pressure between spaced portions of one of said terminals, a slider positioned in one end of said coil spring means and bearing against one of said spaced terminal portions, endwise pressure applied by said spaced terminal portions causing said coil spring means to be flexed into electrical contact with another terminal, said slider being positioned for mechanical contact by said actuator for pivotally moving said coil spring means, about said spaced terminal portions, into and out of electrical contact with said other terminal.

3,863,041

HIGH-VOLTAGE CIRCUIT-INTERRUPTER HAVING A CLOSING RESISTANCE AND IMPROVED SHUNTING-RESISTANCE CONTACTS THEREFOR

Joseph R. Rostron, Monroeville, and Sylvester J. Dropik, Jeannette, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 4, 1973, Ser. No. 421,574

Int. Cl. H01h *33/16*

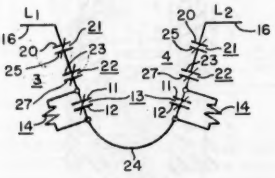
U.S. Cl. 200—144 AP **10 Claims**

1. A high-voltage circuit-interrupter of the type for eliminating high-voltage surges on the controlled line comprising, in combination:

a. means defining a separable pair of main contacts including a movable main contact;

b. an operator for effecting the opening and closing motions of said separable pair of main contacts;

c. means defining a separable pair of resistance contacts including a movable resistance contact disposed in electrical series relationship with said separable pair of main contacts so that in the closed-circuit position of the circuit-interrupter the line current passes serially through the two pairs of separable contacts;
d. means defining a closing resistance connected electrically in shunt with said separable pair of resistance contacts so that when said separable pair of resistance contacts are closed the closing resistance is shorted out of the controlled circuit;
e. said operator including a first movable member responsive to the movement of said movable main contact;
f. a second movable member responsive to the movement of said movable resistance contact;
g. means biasing said second member and said movable resistance contact to the open-circuit position;
h. said first and second movable members being in an abutment condition in the fully open-circuit position of the circuit-interrupter;



i. said first movable member forcing said second movable member and consequently the movable resistance contact into the closed-circuit position during the closing operation of the circuit-interrupter against the tension exerted by said biasing means;
j. said operator providing sufficient velocity of said first movable member during the opening operation of the circuit-interrupter and the inertia of said second movable member being so great that said second movable member lags behind the first movable member during the opening operation of the circuit-interrupter;
k. and means effecting the closing of the separable pair of main contacts during the closing operation of the circuit-interrupter prior in point of time to the closing of the separable pair of resistance contacts so that the closing resistance is connected serially into the controlled circuit during the closing operation and subsequently shorted out by the delayed closing of the separable resistance contacts, whereby high-voltage surges on the controlled line tend to be eliminated.

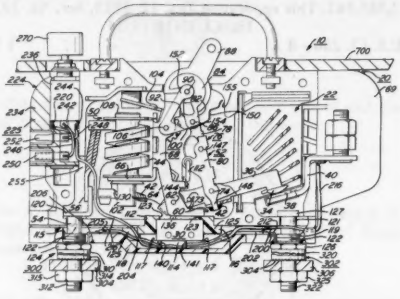
3,863,042

CIRCUIT BREAKER WITH ELECTRICAL AND MECHANICAL TRIP INDICATION

Ronald Nicol, Trenton, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Aug. 1, 1973, Ser. No. 384,702
Int. Cl. H01h *3/46*
U.S. Cl. 200—153 T **27 Claims**

1. a circuit breaker comprising a case,
a stationary contact,
a movable contact mounted on a movable arm,
a collapsible linkage connected to said movable arm for moving the contacts between the contacts "open" and the contacts "closed" positions,
means for collapsing said collapsible linkage upon predetermined electrical overloads to move the contacts from said "closed" to said "open" positions,
operating means connected to said collapsible linkage for moving the contacts between said "open" and "closed" positions,
said collapsible linkage moving in a first path when moving from the contacts "closed" position to the contacts "open" position under the influence of said operating means and in a second path when going from the contacts "closed" to the contacts "open" position due to an electrical overload, and
switch means associated with said collapsible linkage for indicating when said circuit breaker has been electrically tripped "open," and



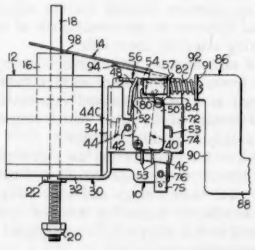
an actuator pivotally mounted within said case and movable by said collapsible linkage from an initial position to a second position when said collapsible linkage moves through said second path,
said actuator activating said switch means upon movement to its second position to indicate the electrically tripped "open" condition, and
said switch means pivoting said actuator to its initial position after said collapsible linkage moves to the contacts "open" position due to an electrical overload.

3,863,043

OPERATING DEVICE FOR SWITCHES OR THE LIKE

Donald R. Boyd, Waukesha, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 1, 1973, Ser. No. 412,048
Int. Cl. H01h *5/00, 73/12*
U.S. Cl. 200—153 R **16 Claims**



1. An operating device useful in performing a function such as closing a switch, a valve or the like, comprising a support means, an operating means mounting for pivotal movement on said support means, an operating element carried by and movable with said operating means, a latch finger carried by and movable with said operating means, a latch member pivotally mounted on said support means independently of said operating means, and normally positioned to lie in the path of movement of said latch finger whereby to prevent pivotal movement in an unlatching direction of said operating means

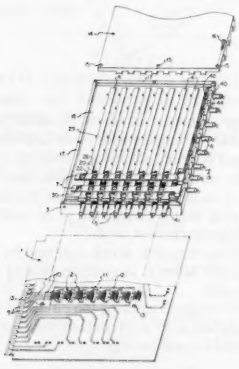
and thus to hold said operating means in a latched position in which said operating element is held in nonengaging relation to a contiguous switch or the like, a follower member forming part of said operating device and adapted to follow the movement of a device external of said operating device, said follower member being engageable with said latch member to impart movement to said latch member whereby a predetermined movement of said follower member in response to movement of said device external of said operating device will move said latch member out of latching relation to said latch finger, and spring means connected to said operating means and effective when said latch member is moved out of latching relation to said latch finger to move said operating means about its pivotal support axis to an unlatched position in which said operating element carried by said operating means engages said contiguous switch or the like.

3,863,044

OPEN CONTACT MATRIX SWITCH

Maurice D. McCormick, Chicago, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed July 18, 1973, Ser. No. 380,432
Int. Cl. H01h *63/04, 67/26*
U.S. Cl. 200—175 **11 Claims**



1. A cross coordinate switching arrangement comprising:

a planar printed circuit board having thereon a plurality of fixed and a plurality of movable contacts extending from said board in engageable relationship with said fixed contacts;

a plurality of actuators slidably supported adjacent to said movable contacts, said actuators including a cam surface engageable with said movable contacts and said actuators being movable in a plane substantially parallel to the plane of said printed circuit board, for selectively camming said movable contacts into engagement with their associated fixed contacts;

and

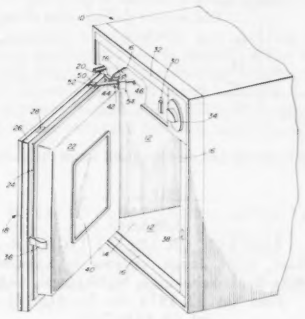
an orthogonal array of operating members selectively engageable with said actuators and adapted to selectively move said actuator means from a first to a second position to thereby operate the movable contact at the selected cross coordinate.

3,863,045

MICROWAVE OVEN INTERLOCK SWITCH ACTUATOR

Harold H. Rosenberry, Fairfax, Iowa, assignor to Amana Refrigeration, Inc., Amana, Iowa

Filed Dec. 13, 1973, Ser. No. 424,584
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 C **5 Claims**



1. Microwave oven apparatus comprising:

an enclosure having an access opening;

a door member for closing said access opening;

a microwave energy source adapted to radiate energy within said enclosure;

an electrical circuit for energizing said source and controlling the operation of said apparatus including safety interlock switch means; and

nonspring-biassed mechanical linkage means for actuating said interlock switch means operatively associated with said door member including a first pivoted member and a second pivoted member interconnected to said first member with said first and second members having independent axes of rotation about a fixed pivot member;

said fixed pivot members being juxtapositioned and spaced apart substantially less than the length of said first pivoted member when said door member is closed;

said first pivoted member being secured to a peripheral wall of said door member and having a free end to engage and actuate said switch means;

said second pivoted member being secured to a peripheral wall of said access opening and having structure to constrain and guide the movement of said first member for positive engagement of said switch means when said door member is closed.

3,863,046

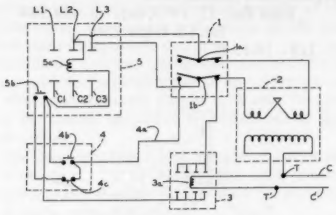
CURRENT CONTROLLING DEVICE

David Ocampo Morales, No. 37 Benito Diez de Gamorra, Ciudad Satelite, Mexico

No Drawing. Filed Nov. 15, 1972, Ser. No. 306,711
Int. Cl. B23k *9/10*
U.S. Cl. 219—132 **3 Claims**

1. A control device for controlling the supply of power to the motor of a motor-generator set used for welding, said device comprising: a first normally open relay between the motor which drives the generator and a source of power and having an actuating coil, a second normally open relay connected in controlling relation to the actuating coil of said first relay and also having an actuating coil, an electrode holder, a manually operable switch on said electrode holder connected in controlling relation to the actuating coil of said second relay, a step down transformer having the primary side connected to said source of power and having a lower voltage secondary side connected in series with the actuating coil of

said second relay and said manual switch only so that the actuating coil of said second relay is energized when the manual switch is closed and de-energized when the manual switch is open.

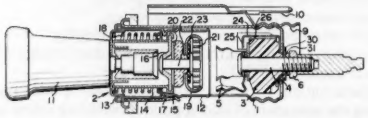


3,863,047

ELECTRIC CIGARETTE LIGHTER

Toshio Mase, Aichi, Japan, assignor to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho, Nishikasugai, Aichi, Japan

Filed Nov. 12, 1973, Ser. No. 415,191
Int. Cl. F23q 7/24
U.S. Cl. 219—265 **3 Claims**



1. An electric cigarette-lighter comprising a lighter case, a terminal disposed in and electrically insulated from said lighter case, a fuse electrically connected to the lighter case, a bimetal contact maker located within said lighter case and electrically connected to the terminal, a removable lighter plug carrying a heater unit at its inner end, said lighter plug being adapted for slidable insertion into the lighter case to cause the heater unit to be fit engaged by the bimetal contact maker to complete an electrical circuit to said heater unit, resilient means urging said lighter plug away from said bimetal contact maker when said heater unit is engaged by said contact maker, said bimetal contact maker being responsive to the temperature of said heater unit and being operative to flex away from said heater unit when said heater unit reaches a predetermined temperature to permit said resilient means to return the lighter plug to a rest position and thereby break said circuit, and means for protecting said lighter against overheating comprising a heat sensing bimetallic element located adjacent the bimetal contact maker, one end of said element being in permanent electrical connection with said lighter case, the other end of said element being free to flex and being normally located in spaced relation to said terminal, said free end being positioned to contact said terminal when said element is flexed by an overheat temperature from said heater unit.

3,863,048

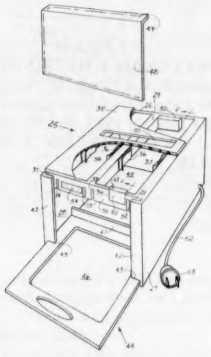
ELECTRIC RESISTANCE HEATER COOKER FOR A FOOD PACKAGE

Morton C. Buckley, 5043 N. 20th Ave., Phoenix, Ariz. 85015

Filed July 11, 1973, Ser. No. 378,172
Int. Cl. H05b 7/18
U.S. Cl. 219—383 **6 Claims**

1. In an electric resistance cooker for a food package having a wall structure enclosing a food portion, a pair of electrodes carried by said wall structure and engaging said food portion and a tab integral and each electrode and extending to the exterior of said wall structure,

a. walls of electric insulating material defining a cooking chamber, with one of said walls being removable from the other walls to provide an access opening through which said food package is inserted into said cooking chamber, said walls including a bottom wall, side walls upstanding from said bottom wall, a rear wall and a top wall and in which a beam extends forwardly from said rear wall at the central portion of the upper edge thereof to the front edge of said top wall, said spring-biased contacts taking the form of spring clips mounted on said beam and the inner faces of said side walls and said bottom, top and side walls having ends defining said access opening and a sliding front wall movable into a position closing said access opening;



b. a pair of spring-biased contacts mounted on said walls and in conductive engagement with said tabs when said food package is received in said cooking chamber and said movable wall is in closed position, and

c. an electric circuit including a pair of conductors terminating in a plug that is connected to an outlet receptacle providing electric current, and

i. a normally open switch which is closed by the movable wall when the latter is in position closing said cooking chamber, and

ii. a terminator for interrupting the circuit to said contacts upon completion of a predetermined cooking period for the food in said package.

3,863,049

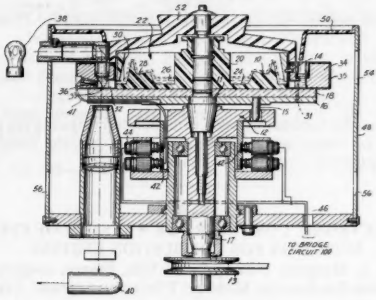
TEMPERATURE CONTROL APPARATUS FOR A CENTRIFUGAL-TYPE CHEMISTRY ANALYZER

Clyde D. Hinman, Wilton, Conn., assignor to Union Carbide Corporation, New York, N.Y.

Filed May 31, 1972, Ser. No. 258,259
Int. Cl. F27b 7/00; F27d 11/02
U.S. Cl. 219—389 **4 Claims**

1. A temperature control apparatus comprising a metal base member; a plurality of chambers adapted to contain liquid located within said base member in heat transfer relationship therewith, the thermal mass of the base member being substantially larger than the thermal mass of the thermal mass of liquid contained in the chambers; housing means substantially enclosing the base member and chambers to separate the base member and chambers from ambient temperature; a heating element adapted to develop heat by the passage of electrical current therethrough, means for passing air in contact with the heating element for the heating of said air and for introducing the heated air into the housing member to transfer heat developed in the heating element to the base member and chambers to raise the temperature thereof to a desired value; tempera-

ture sensing means adapted to provide an electrical signal proportional to the amount by which a selected chamber is below the desired value; control means responsive to the signal of the temperature sensing means adapted to supply electrical energy to the heating element; rate detecting means for obtaining an electrical signal proportional to the rate of



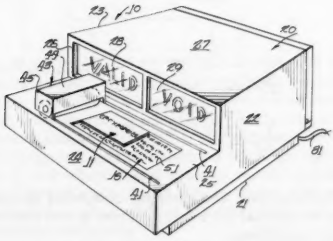
temperature increase of the selected chamber and for applying such electrical signal to the control means to inactivate the control means when the rate of temperature increase is above a predetermined value; means for preventing the signal from the rate detecting means from inactivating the control means as long as the temperature of the selected chamber is below a predetermined value.

3,863,050

AUTOMATIC CREDIT CARD VALIDATING DEVICE

Max T. Brugger, and Antoinette M. Brugger, both of S. Pine Ave., Milwaukee, Wis. 53207

Filed Jan. 7, 1974, Ser. No. 431,351
Int. Cl. G06k *5/00, 7/04*
U.S. Cl. 235—61.7 B **5 Claims**



1. An automatic credit card validating device adapted for use with credit cards and the like having encoding embossments projecting from a face surface thereof, the device comprising:

a housing including at least one substantially horizontal surface thereon;

an elongated rectangularly shaped slot defined in said surface and being of a size and configuration adapted to receive a substantially flat charge slip therein;

a platform resiliently supported for vertical reciprocal movement in said slot and adapted to restingly receive said charge slip thereon;

a rectangularly shaped aperture disposed in said platform and being of a size and configuration corresponding to said charge card such that when said charge card is rested on said charge slip resting on said platform said charge card will overlie said aperture;

means associated with said surface and adapted to depress said charge card against said charge slip to imprint said charge with the information of said charge card;

means for reading the encoded embossments of said charge card, said means disposed in said aperture and adapted to engage the bottom surface of said charge slip in the area of imprint thereof by said charge card to read the encoded embossed projections thereof;

means for checking the validity of said encoded information as read by said reading means; and

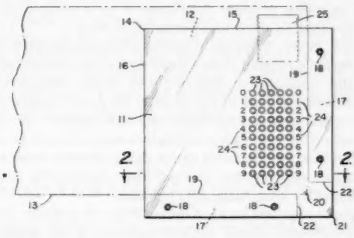
means operable in response to said checking means to indicate whether said charge card is valid or void, such checking taking place simultaneously with the imprinting of the information of said charge card onto said charge slip to provide a rapid and convenient validity check of every charge card each time it is used for a transaction.

3,863,051

DEVICE TO FACILITATE UNIFORM APPLICATION OF ZIP CODE INDICIA TO ENVELOPES

Kenneth H. Wilcoxon, 9 Ericsson, Bethesda, Md. 20034

Filed June 13, 1973, Ser. No. 369,679
Int. Cl. G06k *1/12;* **B43l** *13/00;* **G06k** *19/04*
U.S. Cl. 235—61.12 R **4 Claims**

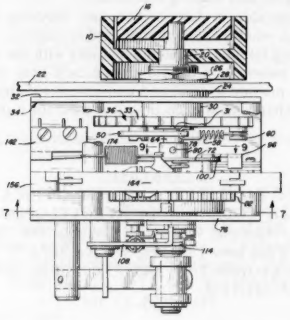


1. A device to assist in applying coded indicia to mailing envelopes of varying sizes and the like comprising a pair of plates in side-by-side spaced relation forming therebetween an envelope-receiving slot, spacer elements between marginal edge portions of the plates and fixedly secured thereto, said spacer elements having straight envelope positioning edges disposed at right angles, and one of said plates having a code field consisting of apertures formed through said plate and said apertures arranged in multiple parallel spaced rows with said rows of apertures in the field extending at right angles, the rows of apertures in one direction being parallel to one of said envelope positioning edges and the rows of apertures extending in the other direction being parallel to the other envelope positioning edge, means for accommodating envelopes which are larger than said plates, said last named means comprising said spacer elements being spacer strips extending along one pair of corner forming marginal edged of the plates, thereby allowing said envelope-receiving slot to be open and unobstructed over the remaining areas of said plates, wherein said plates include at least a pair of square corner forming edges, and said spacer elements comprising spacer strips extending along said corner forming edges and having corresponding ends terminating short of said corners, whereby envelopes having irregular corners may be accomodated, said code field being spaced inwardly of said spacer strips with corner forming rows of apertures in the field parallel with interior straight edges of said strips and spaced equidistantly therefrom.

3,863,052
MECHANICAL COUNTER

Richard L. Collette, Hoffman Estates; Frank S. Vojir, Berwyn, and Roger E. Watts, Chicago, all of Ill., assignors to Guardian Electric Manufacturing Company, Chicago, Ill.

Filed Mar. 18, 1974, Ser. No. 452,183
Int. Cl. G06m 3/02
U.S. Cl. 235—91 R 38 Claims



1. A mechanical counter device comprising, in combination:

an indexing member positionable to a desired set detent position by movement in a first sense;

detent means movable in unison with said indexing member; detent engaging means fixed relative to said detent means and cooperative therewith to enable positioning said indexing means to the desired set detent position;

a register member normally in a null position and positionable from said null position in a second sense to an active position, said second sense being distinct from said first sense, said register member also positionable in said first sense by a counting mechanism;

register member locking means fixed in position relative to movement of said register member in the second sense and positionable in unison with said detent means;

receiving means for said locking means, said receiving means attached to move in unison in the second sense with said register member, said receiving means engageable with said locking means when said register is moved to the active position;

unlocking means attached to the register member and engageable with said locking means when said register member is in the null position to thereby release said locking means from said lock receiving means;

means for driving the register member including said counting mechanism in the first sense from a non-registered position to the registered position; and

means for biasing the register member toward the null position.

3,863,053
SLANT RANGE CORRECTION CIRCUIT

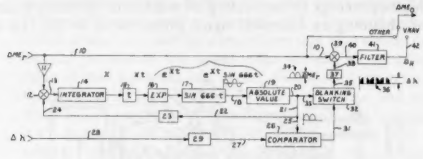
Robert E. Friday, Lenexa, Kans., assignor to King Radio Corporation, Olathe, Kans.

Filed Aug. 27, 1973, Ser. No. 391,617
Int. Cl. G06g 7/78
U.S. Cl. 235—150.2 11 Claims

1. An avionics data system operable to electrically compute horizontal aircraft-to-VORTAC distance from the input signal parameters of altitude and slant range, said system comprising:

means for electrically generating a sinusoidal shaped signal having an amplitude corresponding to said slant range,

means for filtering a portion of said sinusoidal signal corresponding to the present altitude of said avionics system to form a correction term signal, and

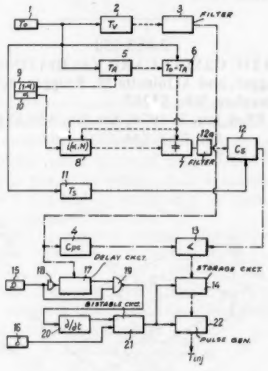


means for subtracting said correction term signal from said slant range input signal parameter to thereby compute horizontal aircraft-to-VORTAC distance.

3,863,054
ELECTRONIC COMPUTER FOR A SYSTEM OF FUEL INJECTION FOR COMBUSTION ENGINES

Louis A. Monpetit, L'Etang-De-La-Ville, France, assignor to Societe Des Procedes Modernes D'Injection Sopromi, Clichy, France

Filed Apr. 10, 1973, Ser. No. 349,718
Claims priority, application France, Apr. 12, 1972, 72.12730
Int. Cl. F02b 3/00; F02m 39/00
U.S. Cl. 235—150.21 22 Claims



1. An electronic computer for computing the quantity of fuel to be injected for a fuel injection system for combustion motors, comprising:

first means for producing signals at a rate proportional to the speed of the motor,

first circuit means for transforming said signals from said first means into a voltage proportional to the speed of the motor,

second means for producing a signal corresponding to the posted speed of the motor,

second circuit means for producing in response to the signals from said first and second means and the voltage from said first circuit means after each signal from the first means a voltage representative of the quantity of fuel to be injected according to curves of statism of the operation of the motor,

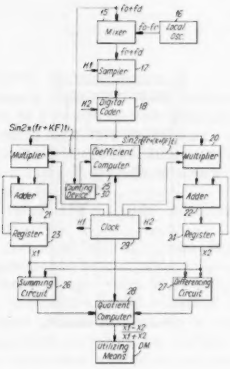
third circuit means for transforming the voltage proportional to the speed of the motor from said first circuit means into a voltage representing the quantity of fuel to be injected according to a curve of full load operation of the motor, and

fourth circuit means for selecting the smaller of the two voltages produced by said second and third circuit means representing the quantity of fuel to be injected according to the curves of statism and according to the curve of full load.

3,863,055
DOPPLER SCANNING GUIDANCE SYSTEM RECEIVER WITH FOURIER TRANSFORM COMPUTER

Jean-Marie Henri Colin, Paris, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 27, 1973, Ser. No. 354,924
Claims priority, application France, Apr. 28, 1972, 72.15212
Int. Cl. G06g 7/78; G01s 1/40
U.S. Cl. 235—150.27 **10 Claims**



1. A receiving system for use at a remote station in a Doppler scanning guidance system which includes a ground beacon having a transmitter, a linear array of antenna elements, and commutator means for successively energizing said antenna elements from said transmitter at a frequency $f+fo$, said array also being arranged to transmit a reference signal at a frequency f, and wherein said receiver system operates to determine a spatial angle of said remote station with respect to a predetermined reference line extending from said array, the combination comprising:

means within said receiver system for receiving and deriving a beat signal between said f and $(f + fo)$ signals, said receiving system inherently receiving said signals by direct and reflected paths;

counting means responsive to said transmitted signal for determining the frequencies of the two multiples of the repetition frequency of said ground beacon commutation, said two multiples being the ones bracketing the value of the Doppler frequency resulting from said ground beacon array commutation, received on the said direct path signal;

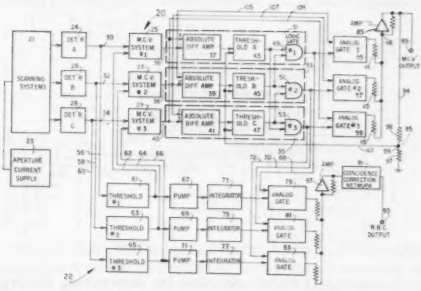
a Fourier transform computer responsive to said beat signal for deriving a pair of Fourier transforms thereof corresponding to said two multiples as determined by said counting means;

and angle computing means responsive to said transforms for determining an intermediate value representative of said spatial angle of said remote station with respect to said predetermined reference line.

3,863,056
METHOD AND APPARATUS FOR MULTICHANNEL VOTING

Robert Ivan Klein, Hialeah, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed June 29, 1973, Ser. No. 374,988
Int. Cl. G06f 7/38; G06g 7/12; G01n 15/00
U.S. Cl. 235—151.3 **18 Claims**

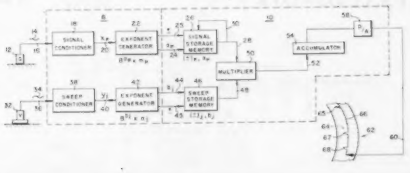


1. A voting method for excluding data output from a malfunctioning electrical channel within a system having at least three parallel channels, each channel cumulatively carrying substantially the same electrical pulse data, comprising the steps of: producing cumulatively in each channel an indication representative of the mean size of the pulses carried in that channel, comparing the mean size indications of all of the channels, and excluding the pulse data output from any channel from which the mean size indication does not compare favorably with the remaining channels.

3,863,057
APPARATUS FOR SERIALLY-CORRELATING TIME SERIES

Lee E. Siems, Houston, Tex., assignor to Digital Data Systems, Inc., Houston, Tex.

Filed Jan. 17, 1972, Ser. No. 218,259
Int. Cl. G01v 1/36; G06f 15/34
U.S. Cl. 235—152 **5 Claims**



1. A device for calculating the approximate value of the inner product of two vectors whose component values are expressed as floating-point numbers wherein each number consists of a sign, an exponent, and a mantissa comprising:

means for setting the mantissas of said component values substantially equal to one;

exponent generator means for associating with each exponent its corresponding sign to form two vectors of the signed exponents;

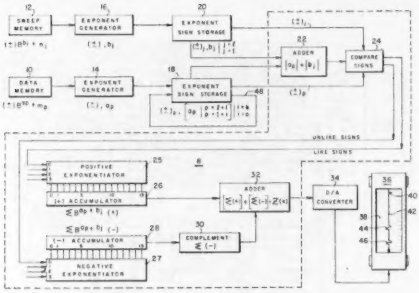
correlator means to form the inner product of said vectors of signed exponents; and

coupling means interconnecting said exponent generator means with said correlator means.

3,863,058
APPARATUS FOR DIGITAL CORRELATION

Carl H. Savit, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.

Filed Jan. 17, 1972, Ser. No. 218,284
Int. Cl. G06f *15/34*; G01v *1/36*
U.S. Cl. 235—152 9 Claims



1. A compact digital apparatus for determining the degree of association between two time series of digital quantitites expressed in floating-point form wherein each component value of said two time series consists of a sign, an exponent, and a mantissa comprising:

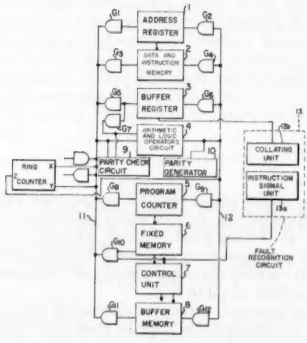
means to remove the signs and exponents from the component values of said two time series; and

correlator means coupled to said removing means for using said signs and exponents to correlate said two time series, said correlator means including an adder means for adding the absolute values of said exponents in pairs, one of said pairs of exponents being selected from one time series and the other of said pairs being selected from the other time series.

3,863,059
FAULT RECOGNITION APPARATUS FOR ARITHMETIC/LOGIC DEVICES

Susumu Seki; Makoto Noumi, both of Kokubunji; Tadashi Takaoka, and Hisao Toriyama, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 28, 1972, Ser. No. 310,091
Claims priority, application Japan, Dec. 2, 1971, 46-97335
Int. Cl. G06f *11/06*
U.S. Cl. 235—153 B 6 Claims

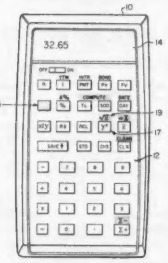


6. A processing and control apparatus according to claim 5, further comprising buffer register means, a 10th and 11th gate for connecting said buffer register means between said pair of buses, and means for applying an output of said buffer register means to said first register of said ring counter-type arithmetic unit means as a preset value, said ring counter type arithmetic unit means being controlled to carry out a predetermined arithmetic operation with said preset value, and said third means of said fault recognition system means collating a predetermined value with an operation result of said predetermined arithmetic operation by said ring counter-type arithmetic unit means.

3,863,060
GENERAL PURPOSE CALCULATOR WITH CAPABILITY FOR PERFORMING INTERDISCIPLINARY BUSINESS CALCULATIONS

France Rode, Los Altos; William L. Crowley, Jr., Cupertino; Alexander D. R. Walker, San Francisco, and David S. Cochran, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 30, 1972, Ser. No. 302,371
Int. Cl. G06f *7/38*
U.S. Cl. 235—156 34 Claims



1. An electronic calculator comprising:

keyboard input means having a plurality of numeric keys manually operable for entering numerical data into the calculator and having a plurality of non-numeric control keys manually operable for controlling the calculator, said non-numeric control keys including a plurality of function keys associated with a plurality of mathematically related variables and manually operable for designating selected numerical data as said variables and for conditioning the calculator to perform mathematical operations involving said variables;

storage means coupled to said keyboard input means for storing numerical data entered into or calculated by the calculator;

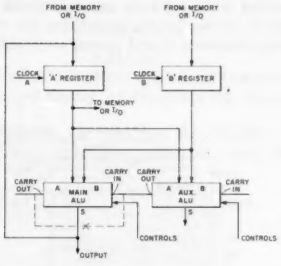
processing means coupled to said keyboard input means and to said storage means and responsive to successive actuation of one or more of said numeric keys and one or more of said non-numeric control keys in a sequence, including one of said function keys followed by one of said function keys without interruption by any of said numeric keys, for automatically performing a mathematical operation employing selected numerical data, stored in said storage means and designated as one or more of said variables by actuation of one or more of said function keys, to determine the value of a variable associated with the last of said function keys in said sequence; and

output means coupled to said processing means for indicating the value of the variable associated with the last of said function keys in said sequence.

3,863,061
ALU WITH END-AROUND CARRY DERIVED FROM AUXILIARY UNIT

George B. Kazantzis, Endicott, and Richard E. Nier, Apalachin, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 16, 1973, Ser. No. 389,067
Int. Cl. G06f *7/50*
U.S. Cl. 235—175 **2 Claims**



1. In a computer, the combination of

a main arithmetic logic unit which performs addition and subtraction by a complementary process,

said arithmetic logic unit having a pair of input lines, a carry-out location at which the end-around carry signal appears a carry-in location at which the end-around carry signal is applied,

said carry-out and carry-in locations being disconnected;

an auxiliary arithmetic logic unit which also performs addition and subtraction by a complementary process,

said auxiliary arithmetic logic unit having a pair of input lines, a carry-out location at which the end-around carry signal appears and a carry-in location at which the end-around carry signal is applied,

said last mentioned carry-out and carry-in locations also being disconnected;

means for connecting the input lines of said main and auxiliary arithmetic logic units in parallel; and

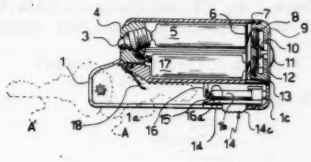
means for connecting the carry-out location of said auxiliary arithmetic logic unit to the carry-in location of said main arithmetic logic unit whereby the end-around carry signal produced by said auxiliary arithmetic logic unit is utilized in the operation of said main arithmetic logic unit.

3,863,062
KEY HOLDER WITH FLASHLIGHT

Joseph Adalbert Caron, 890 11th Ave., Grand Mere, Quebec, Canada

Filed Feb. 26, 1973, Ser. No. 336,053
Int. Cl. F21v *33/00*
U.S. Cl. 240—6.4 K **4 Claims**

1. A combined key holder and flashlight comprising an elongated casing having top, bottom and side walls for holding dry cell batteries and having a front and a back opening, means to support a light bulb in said front opening, a cover for closing said back opening, said side walls extending downwardly from said bottom wall and forwardly from a light bulb in said support means, to define side wall front portions laterally and forwardly offset from a light bulb carried by said support means, said side wall extensions defining a compartment for receiving a plurality of keys disposed side by side, said side wall extensions defining a continuous opening at their periphery, transverse pivot pin means extending between and carried by said front portions of side wall extensions, whereby keys can be pivotally mounted on said pivot means for pivoting movement between an inactive position stored in said compartment with their tip portion pointing rearwardly of said casing and an active position with their tip portion pointing forwardly of said casing, so constructed and arranged that the light beam emitted by a light bulb carried by said support means will illuminate the tip portion of a key in active position and the keyhole area of a lock adjacent which the said key tip portion is disposed, said light bulb support means including a sleeve-like member to receive a light bulb having its axis inclined with respect to the long axis of said casing forwardly and downwardly with respect to said casing, and further in-

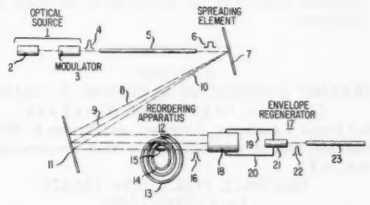


cluding a locking means carried by said casing and releasably engageable with the tip portion of keys pivotally mounted on said pivot means, to hold said keys in inactive position stored in said compartment, said locking means including a slider member carried by and located between said side wall extensions and having a forwardly extending bottom plate of sufficient length to underlie the tip portions of keys of different lengths all pivotally mounted on said pivoted pin means, and an operator button carried by the underside of said bottom plate and protruding from said continuous opening, said slider member movable between an advanced key retaining position and a retracted key releasing position.

3,863,063
OPTICAL COMMUNICATIONS SYSTEMS

George Sanford Indig, Bernards Twsp., Somerset County, and Peter Michael Rentzepis, Millington, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murry Hill, N.J.

Filed June 1, 1973, Ser. No. 365,768
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **15 Claims**



1. Optical communications system including a first means for producing optical wave energy within the wavelength range of from 500 micrometers to 1,000 Angstrom units; second means for modulating such wave energy so that said first and second means together result in exiting envelopes representing energy packets having a first time dimension and a second dimension selected from the group consisting of amplitude, frequency, and phase; a transmission line for transmitting such envelopes a distance of at least 100 meters, said line evidencing wavelength dispersion; third means for extracting said envelopes from the said line at at least the said distance from the said first and second means; and fourth means for processing such extracted envelopes, characterized in that there is interposed between said second means and said fourth means equipment including both a spreading element

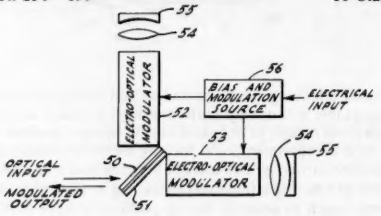
for angularly displacing envelope energy so as to produce component envelopes of differing wavelength content and evidencing differing angular displacement dependent upon wavelength and reordering apparatus for introducing differing delay times for different component envelopes, with longer delay times for longer wavelength components, so that the time displacement introduced by the transmission line for different wavelength portions of the envelope energy is at least partially compensated by the said reordering apparatus.

3,863,064

DIFFERENTIAL RETROCOMMUNICATOR

Walter M. Doyle, Utica, N.Y., and Matthew B. White, Newport Beach, Calif., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed Jan. 3, 1972, Ser. No. 214,617
Int. Cl. 331 *94.5*; H04b *9/00*
U.S. Cl. 250—199 **10 Claims**



1. An improved remote terminal intended for use in an optical retrocommunications system, said system having, in addition to said remote terminal, a base terminal comprising an optical transmitter and an optical receiver, said transmitter emitting optical energy directed at said remote terminal and said optical receiver receiving optical energy reflected from said remote terminal to recover information impressed on said optical energy at said remote terminal, wherein said improvement comprises:

a. two retrodirective reflectors, each capable of receiving a portion of said emitted optical energy from said optical transmitter and returning a portion of said emitted optical energy to said receiver, and

b. means for phase modulating the reflection of one of said reflectors relative to the reflection of the other of said reflectors.

3,863,065

DYNAMIC CONTROL OF BLOOMING IN CHARGE COUPLED, IMAGE-SENSING ARRAYS

Walter Frank Kosonocky, Somerset, and Brown F. Williams, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 293,829
Int. Cl. H01l *15/00*
U.S. Cl. 250—211 J **10 Claims**

1. A charge-coupled, radiant-energy sensing array comprising, in combination:

a semiconductor substrate;

insulation over said substrate;

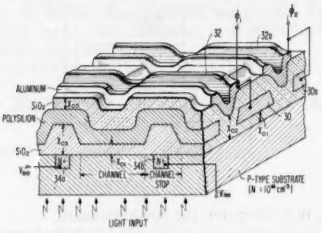
a plurality of rows of charge storage locations comprising, at each location, *n* electrode means, where *n* is an integer greater than 1, each electrode means spaced by said insulation from the substrate;

conductors joining corresponding electrode means in each row and passing over the regions of the substrate between rows;

means, during an integration time, for applying a voltage to the conductors leading to at least a first electrode means of each location in each row for establishing, in the substrate, beneath that first electrode means at each location, a potential well for the accumulation of charge signal in response to radiant energy excitation;

means, also during said integration time, for maintaining the conductors leading to a second electrode means of each location in each row at a potential for establishing, in the substrate, beneath that electrode means at each location, a potential barrier for tending to prevent the charge signal accumulated at each location in a row from passing to the next location in the same row;

a plurality of buses, each located between a pair of rows, and each extending along the length of the rows, each bus imbedded in the substrate and maintained at a potential to act as a drain for charge carriers, the conductors extending transverse to and passing over said buses; and



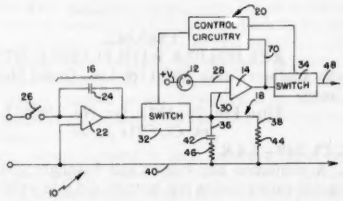
means including either a channel stop of predetermined impurity or an insulator of predetermined thickness adjacent the buses responsive to the voltage applied to the conductors leading to the first electrode means for establishing in the substrate between the potential well beneath each said first electrode means and each bus, a potential barrier which is lower than the barrier beneath each second electrode means, whereby any charge signal in excess of that which can be stored in the substrate beneath a first electrode means preferentially flows over the lower barrier to a bus rather than to the potential well beneath the first electrode means in the next adjacent location in the same row.

3,863,066

VOLTAGE RUN-DOWN CIRCUIT

Gerhard A. Liedholz, Miami, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed Apr. 16, 1973, Ser. No. 351,794
Int. Cl. H01j *39/12*
U.S. Cl. 250—214 R **3 Claims**



3. In a photometric analysis system for measuring concentration of a substance in a liquid, said system being of the type including a comparator having first and second inputs, a photoresponsive device connected to said first input, a voltage run-down circuit including first and second circuit branches connected in parallel, a capacitor in said first branch and a resistance in said second branch, said voltage run-down circuit being connected between said second input of said comparator and a common conductor for said system, means for storing a reference voltage and means for cyclically applying said reference voltage to said voltage run-down circuit and for

cyclically applying the output of the comparator to a measuring device when said reference voltage is not being applied to said voltage run-down circuit and said capacitor thereof is discharging, the output of said comparator being a signal which is related to the log of the voltage difference between the reference voltage and the voltage from the photoresponsive device and which can be directly converted to concentration units, the improvement comprising a resistance in said first branch in series with said capacitor to provide an initial step-down of the run-down voltage when the capacitor starts to discharge to compensate for inadequate high frequency response in said comparator.

3,863,067

ORIENTATION INDICATING APPARATUS

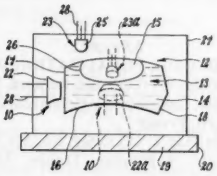
Cornelius Leonard Gooley, 63 Staughton Rd., Victoria 3146, Australia

Filed July 23, 1973, Ser. No. 381,652

Claims priority, application Australia, July 24, 1972, 9802/72

Int. Cl. G01c *9/00*; **G01d** *5/34*

U.S. Cl. 250—231 R **9 Claims**



1. Orientation indicating apparatus for applying to a member to indicate when the member is in a chosen orientation, said apparatus including: radiation modulating means having a chamber charged with modulating liquid defining an orientation bubble movable therein according to the orientation of the modulating means, radiation emitting means positioned to emit radiation into said chamber so as to impinge on said bubble depending on the orientation of the modulating means, and radiation receiving means including radiation detecting means positioned to receive radiation deflected laterally by said bubble and said receiving means being arranged to generate an identification signal when the radiation received from the bubble is at a maximum intensity; the arrangement and placement of the emitting means and detecting means relative to the modulating means being such that when the member is in the chosen orientation, radiation from the emitting means passes through the modulating liquid, impinges on a near boundary of the bubble, and is deflected laterally thereby so as to be received with maximum intensity by the detecting means thus producing the identification signal.

3,863,068

TIME-OF-FLIGHT MASS SPECTROMETER

Walter P. Poschenrieder, Mintraching, Germany, assignor to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Gottingen, Germany

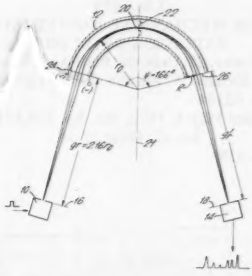
Filed July 27, 1972, Ser. No. 275,549

Claims priority, application Germany, July 27, 1971, 2137520

Int. Cl. H01j *39/34*

U.S. Cl. 250—287 **14 Claims**

1. Time-of-flight mass spectrometer comprising means defining an ion flight path having an entrance plane and an exit plane, a pulsed ion source beyond the entrance plane, which source emits a parcel of accelerated ions into said flight path, in which the ion parcel divides into partial parcels of ions of equal effective mass, with the ions of different partial parcels having differing effective mass, said flight path including a straight part, field generating means defining a deflection field which is traversed by the ions in substantially arcuate paths and which is dimensioned with regard to the straight part in such a way that the dispersion in the time of flight of the ions in the deflection field, caused by different initial velocities of ions of equal effective mass, is equal but reverse in sign to that in the straight path, and ion detection means located beyond the exit plane of the flight path, wherein the improvement consists in that the flight path is symmetrical with respect to a plane of symmetry mid-way between the entrance plane and the exit plane, said path including at least two said straight



parts adjoining opposite boundaries of the deflection field, and an apertured stop located at an intermediate image plane in said plane of symmetry in the deflection field, said field generating means defining two deflection field areas symmetrically on opposite sides of said plane of symmetry, which areas are traversed by ions on opposite respective sides of a central arcuate path passing through said stop aperture, and means converging the ions to an image in the exit plane under conditions of both velocity and direction focusing.

3,863,069

ELECTRON MICROSCOPE WITH ENERGY ANALYZER

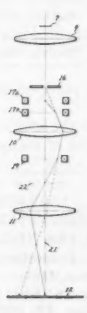
Kohei Shirota, Tokyo, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1974, Ser. No. 435,725

Claims priority, application Japan, Jan. 31, 1973, 48-12654

Int. Cl. H01j *37/26*

U.S. Cl. 250—305 **5 Claims**



1. A transmission electron microscope comprising:

a. means for creating, condensing and directing an electron beam to irradiate a transmission specimen,

b. an image forming lens system comprising at least an objective lens and intermediate lenses defining an optical axis,

c. shiftable baffle means having a slit therein positionable during beam energy analysis to align the slit with the optical axis of th image forming lens to substantially

prevent an electron beam passing through said specimen off the axis from passing through said slit,

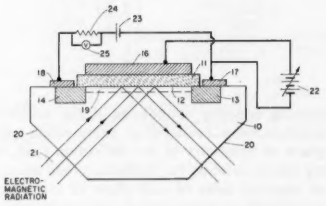
d. means for deflecting the electron beam passed through said baffle means during beam energy analysis causing it to enter the intermediate lens off-axially such that the intermediate lens disperses the beam according to the energy of the electrons therein, and

e. imaging means upon which the dispersed beam is projected such that the beam energy may be analyzed.

3,863,070
QUANTUM MECHANICAL MOSFET INFRARED RADIATION DETECTOR

Robert H. Wheeler, 29 Crescent Bluff Ave., Branford, Conn. 06405, and Richard W. Ralston, 5002 Stears Hill Rd., Waltham, Mass. 02154

Filed May 4, 1972, Ser. No. 250,278
Int. Cl. H01l *15/06*
U.S. Cl. 250—339 **6 Claims**



1. A quantum mechanical voltage-tunable electromagnetic radiation detector, comprising in combination

a. a semiconducting silicon base member having at least one bevelled edge thereby to provide a surface normal to the direction at which radiation is introduced into said detector;

b. a silicon dioxide layer on the surface of said base forming an interface therewith;

c. charge carrier source and charge carrier drain means forming a channel at said interface;

d. variable voltage applying means for impressing a gate voltage across said channel;

e. radiation directing means, including said bevelled edge of said base member, adapted to introduce electromagnetic radiation into said channel in a manner to obtain a radiation component of electric field vector perpendicular to said channel;

f. means to impress a potential difference along said channel; and

g. means to measure the electrical resistance along said channel as a function of said gate voltage.

3,863,071
INFRARED MEASURING SYSTEM WITH CHANNEL SPECTRA NEGATION

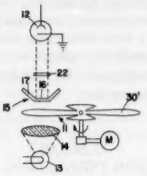
Angelo J. Campanella, Columbus, Ohio, assignor to Infra Systems, Inc., Columbus, Ohio

Continuation of Ser. No. 261,014, June 8, 1972, abandoned. This application Apr. 17, 1974, Ser. No. 461,695
Int. Cl. G01t *1/16*
U.S. Cl. 250—339 **6 Claims**

1. In an infrared system for measuring the constitutent properties of a thin film material subject to the effect of channel spectra, wherein at least two beams of infrared energy are radiated, passed through or reflected from the material, and then detected, one of said beams being the reference signal and one being the absorption signal, the improvement being in the portion of the system for deriving the separate beams of energy and comprising:

a. filter means positioned to limit the passband of all beams to a band where perceptible absorption exists in the film material to be measured, and

b. a material sample, positioned in said system to attenuate only the beam corresponding to the reference signal by



the passage of said beam through said material sample and absorption thereby, wherein said sample is:

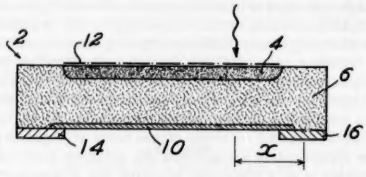
1. made of the same material or a material spectrally similar to that to be measured, and

2. said sample is separate from the film material to be measured.

3,863,072
SEMICONDUCTOR LOCALIZATION DETECTOR

Arlette Garin, Gif-sur-Yvette, and Bernard Waast, Cachan, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed May 2, 1973, Ser. No. 356,588
Claims priority, application France, May 19, 1972, 72.18205
Int. Cl. G01t *1/24*
U.S. Cl. 250—370 **10 Claims**



1. A detector constituted by:

a wafer of semiconductor material comprising from the front face towards the rear face thereof a metallic thin film, a *p*-type layer, an *n*-type layer, a layer of constant thickness of semiconductor material heavily doped with *n*-type impurities and at least two electrical contacts,

means for applying a reverse potential difference to the junction between said *p*-type layer and the adjacent *n*-type layer of said wafer.

3,863,073
AUTOMATIC SYSTEM FOR PRECISE COLLIMATION OF RADIATION

Howard G. Wagner, New Canaan, Conn., assignor to The Machlett Laboratories, Incorporated, Stamford, Conn.

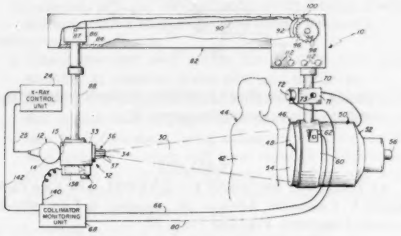
Filed Apr. 26, 1973, Ser. No. 354,826
Int. Cl. G03b *41/16*
U.S. Cl. 250—402 **12 Claims**

1. A radiographic system comprising:

means for directing a beam of radiation from a source through an adjustable shutter aperture and onto an image receptor installed at a selected distance from the source; and

automatic means for adjusting the size of the aperture in accordance with the size of the receptor and the source-

to-image receptor distance, said automatic means including mechanical drive means for adjusting the shutter



aperture and electronic means for removing hysteresis from the drive means.

3,863,074

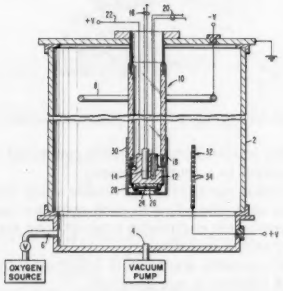
LOW TEMPERATURE PLASMA ANODIZATION APPARATUS

John F. O'Hanlon, Yorktown Heights, and William B. Pennebaker, Carmel, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1972, Ser. No. 284,824

Int. Cl. C23b *11/00*; B01k *1/00*

U.S. Cl. 250—542 **5 Claims**



1. In an anodizing system comprising a gaseous plasma composed of ions and electrons, in a closed chamber system the latter having a certain ratio of high electrons to low energy electrons,

means for supporting a metal film to be anodized in said plasma,

a first electrode supported in said chamber and maintained at a negative potential,

means for applying a positive potential with respect to said first electrode to said metal film so as to support anodization of said film, and

a grid supported in said chamber, and biased positively with respect to said plasma so as to increase said ratio of high energy electrons to low energy electrons in said plasma during the anodization of said metal film.

3,863,075

LIGHT EMITTING DIODE ASSEMBLY

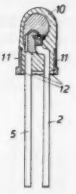
Edward Albert Ironmonger, Towcester, and Roy Billam, Worksop, both of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland

Filed June 25, 1973, Ser. No. 373,593

Claims priority, application Great Britain, June 29, 1972, 30462/72

Int. Cl. G02f *1/23*

U.S. Cl. 250—552 **20 Claims**



1. A light emitting diode assembly which includes a light reflector formed at one end of, and as an integral part of, a first electrical supply lead; a light emitting diode mounted within the reflector, one side of the diode junction being connected in electrical contact with the reflector; and a second electrical supply lead, one end of which is connected in electrical contact with the other side of the diode junction, the diode, the reflector and the said one end of the second electrical supply lead being encapsulated in a bead of a light transparent material.

3,863,076

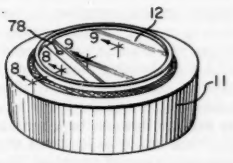
OPTICAL SMOKE DETECTOR

Donald F. Steele, Cohasset, and Robert B. Enemark, Weymouth, both of Mass., assignors to Electro Signal Lab. Inc., Rockland, Mass.

Filed July 24, 1973, Ser. No. 382,058

Int. Cl. G01n *21/26*

U.S. Cl. 250—574 **17 Claims**



1. An optical smoke detector structure comprising:

a base forming a bottom wall and a side wall partially surrounding a dark chamber and having a light excluding and smoke transmissive entry to the dark chamber,

an optical block assembly forming means to position an exciter lamp and a photocell and passages respectively leading from the lamp and cell to spaced openings at one side of the block, the block comprising means to shield the photocell from direct light from the lamp,

guide means on the base slidingly receiving the optical block assembly and positioning said side of the block opposite the base side wall thereby to define a dark chamber, and

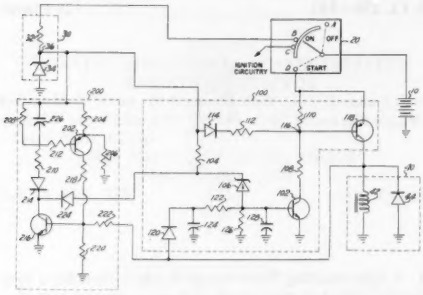
a light excluding cover for the dark chamber fitting over the block and side wall to complete enclosure of the dark chamber and operational assembly of the smoke detector, the cover and sidewall having integral telescopingly interengaging portions positively positioning the cover on the base.

3,863,077

STARTER LOCK-OUT CIRCUIT

Joseph V. Bienkowski, Elmira, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jan. 19, 1973, Ser. No. 324,935
Int. Cl. F02n *11/08*
U.S. Cl. 290—38 **6 Claims**



1. In combination with an electric starting system for cranking an internal combustion engine of the type having a battery providing electrical power; and electromechanical cranking system including a starter motor and means for engaging the starter motor with the engine; and a mechanical switch disconnecting the battery from circuit relationship with the cranking system in a first position and connecting the battery in circuit relationship with said cranking system providing a current flow in a second position, said cranking system in response to the current flow couples the starter motor to the engine and subsequently applies power to the starter motor, the improvement comprising:

bistable means having solid state components receiving electrical power from said battery independent of said mechanical switch for switching from an initial state to a lock-out signal generating second state in response to a signal indicative of a current flow to the cranking system, said bistable means operative to remain in said second state as long as said electrical power is received and for a predeterminable time after the removal of the electrical power from the bistable means; and

a start control circuit electrically disposed between the mechanical switch and the cranking system for controlling the current flow to the cranking system, said start control circuit having at least one transistor switch, said transistor switch having an initial ON state permitting an initial current flow to said cranking system when said mechanical switch is in said second position and an OFF state inhibiting said ccurrent flow, said start control circuit operative to switch said at least one transistor switch to said OFF state in response to said lock-out signal after said initial current flow to the cranking system is terminated.

3,863,078

JOSEPHSON DEVICE PARAMETRONS

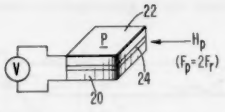
Hans H. Zappe, Granite Springs, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 267,840, June 30, 1972, abandoned. This application Mar. 14, 1973, Ser. No. 341,002
Int. Cl. H03k *17/56*
U.S. Cl. 307—88 P **41 Claims**

1. A parametron device, comprising:

an isolated Josephson tunneling device which is electrically unconnected to any source of voltage or current,

pump means for providing an oscillating magnetic field which intercepts said isolated Josephson tunneling device



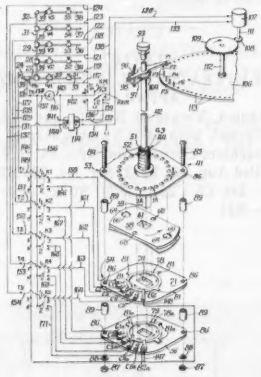
causing said Josephson tunneling device to parametrically oscillate at a resonant frequency F_r.

3,863,079

AUTOMATIC SEQUENCE CONTROL APPARATUS

Ronald V. Calabrese, Addison, Ill., assignor to Lumenite Electronic Company, Franklin Park, Ill.

Filed Feb. 15, 1974, Ser. No. 442,790
Int. Cl. H02j *3/00*; **G05b** *19/00*
U.S. Cl. 307—41 **15 Claims**



10. In an automatic sprinkler sequence control system having:

a plurality of sprinkler means each connected through conduit means to a source of water;

an individual electrically activatable valve in said conduit means controlling flow to each sprinkler means;

the improvement comprising programming means having a rotary switch including

a shaft rotatably journaled in a support frame for unlimited rotation in one direction,

detent means acting between said shaft and support frame for holding said shaft in a series of stable detent positions which are equally angularly spaced throughout a full 360° turn of said shaft,

once contact deck having one plurality of output contacts supported in a portion of a circular path about said shaft connected respectively to said electrically activatable valves,

one wiper contact means carried by said shaft and having a plurality of wiper contacts equally arcuately spaced about said shaft, each being sequentially engageable with said output contacts on rotation of said shaft, succeeding adjacent engaged positions of said wiper contacts with said output contacts coinciding with a succession of adjacent detent positions of said shaft;

means for actuating said rotary switch including

a trip lever oscillatably supported for swinging movement about said shaft and biased in one direction against a stop, and

a pawl carried by said lever engageable with teeth on a ratchet wheel on said shaft to incrementally rotatably advance said shaft and wiper contact means between succeeding adjacent detent positions in response to repeated oscillations of said trip lever through a predetermined arc,

the number of teeth on said ratchet wheel being a whole multiple of the number of said detent positions;

timing means including

a timing member and means for rotating said timing member at constant speed past said trip lever,

a plurality of timing elements carried by said timing member sequentially engageable with said trip lever, each said timing element being effective when moved past said lever to oscillate said lever through said predetermined arc to rotatably advance said shaft and wiper contact means from one of said detent positions to a next adjacent detent position;

an electrical power source connected between said wiper contact means and each of said individual electrically activatable valves;

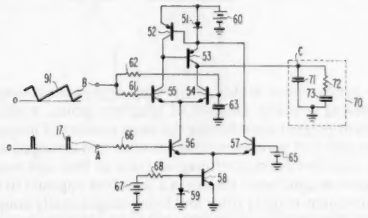
whereby sequential actuation of said trip lever by said timing elements advances said wiper contact means to connect said power source successively to said individual electrically activatable valves to thereby energize and deenergize said valves in predetermined sequence determined by the positions of said timing elements on said timing member.

3,863,080

CURRENT OUTPUT FREQUENCY AND PHASE COMPARATOR

Steven Alan Steckler, Clark, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 18, 1973, Ser. No. 407,762
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 R **10 Claims**



1. A comparator comprising in combination:

a direct current voltage source;

a first source of signals;

means coupled to said first source of signals for providing a first reference potential representative of signals from said first source;

a signal combining circuit coupled to said direct current voltage source;

a first differential amplifier coupled to said signal combining circuit for obtaining operating current from said direct current voltage source through said signal combining circuit and for creating at a junction of said signal combining circuit and said first differential amplifier an output terminal of said comparator, said first differential amplifier also having a first input terminal coupled to said first source of signals and having a second input terminal coupled to said means providing a first reference potential for comparing signals from said first source to said first reference potential;

a second source of signals;

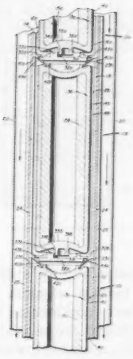
switching means coupled to said second source of signals and to a terminal of said signal combining circuit and responsive to said second source of signals for providing a current path for diverting said operating current from said terminal of said signal combining circuit thereby rapidly inhibiting the supply of current from said direct current voltage source to said first differential amplifier in such a manner as to rapidly turn off said first differential amplifier.

3,863,081

SERIES-CONNECTED THERMIONIC ENERGY CONVERTERS

Edwin Jules, and William J. Levedahl, both of Baltimore, Md., assignors to Teledyne, Inc., Los Angeles, Calif.

Filed July 21, 1964, Ser. No. 384,079
Int. Cl. H01j *45/00*
U.S. Cl. 310—4 **16 Claims**



1. A series-connected assembly of thermionic devices for the generation of electrical power comprising:

a series of cylindrical spaced apart axially aligned heated cathodes;

a series of tubular axially aligned cooled anodes each surrounding a respective one of said cathodes;

a series of interelectrode leads electrically connecting said anodes to said cathodes of adjacent said devices; and

a series of conductive back emission shields, each joined to a respective one of said anodes at one end thereof and extending into the spaces between adjacent cathodes and between said interelectrode leads and their adjacent higher potential said cathodes, said shields remaining substantially cooler than said cathodes by virtue of their conductivity and their connections to said cooled anodes.

3,863,082

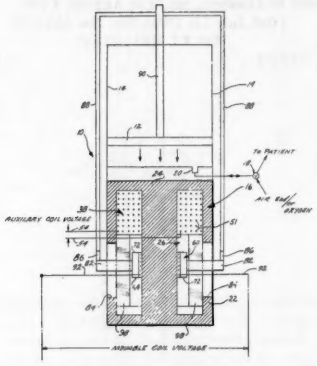
PERMANENT MAGNET TRANSLATIONAL MOTOR WITH AUXILIARY ELECTROMAGNET

Donald H. Gillott, and James G. Simes, both of Sacramento, Calif., assignors to Sutter Hospitals Medical Research Foundation, Sacramento, Calif.

Filed Jan. 15, 1973, Ser. No. 323,501
Int. Cl. H02k *33/18*
U.S. Cl. 310—27 **23 Claims**

1. A permanent magnet translational motor comprising a shell having an outer wall with a pair of closed ends enclosing a hollow interior, an elongated core extending through the hollow interior of the shell from one closed end to the other, permanent magnet means in the interior of the shell surrounding a predetermined length of the core, the permanent magnet means being spaced laterally from the core to form a narrow working air gap between the permanent magnet means and

the core, with a magnetic field being established across the working air gap, the core having a first portion of its length located in the working air gap and a second portion of its length located adjacent to but outside of the working air gap, a movable drive coil located in the working air gap and surrounding the first portion of the core, the drive coil being connected to a first source of electrical power and being movable back and forth relative to the first portion of the core in the magnetic field in response to changes in electric current passing through it, the drive coil having opposed mounting means extending outwardly therefrom through corresponding



openings in the shell outer wall for attachment to a load for applying force to the load in response to movement of the drive coil, and an auxiliary coil located within the interior of the shell and wound around the second portion of the core such that the drive coil is movable toward and away from the auxiliary coil, the auxiliary coil being connected to a second source of electrical power independent of the power source associated with the drive coil for varying the magnetic field across the working air gap in response to changes in electric current passing through the auxiliary coil to increase the maximum force which may be developed by the drive coil.

3,863,083

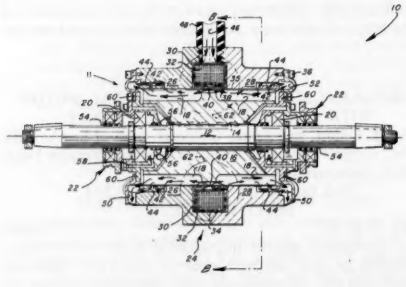
FLUID-COOLED DYNAMOMETER

Ralph L. Jaeschke, Kenosha, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed June 13, 1973, Ser. No. 369,669

Int. Cl. H02k *9/19, 49/02*

U.S. Cl. 310—52 **16 Claims**



1. A fluid cooled eddy-current apparatus comprising:

a housing enclosure having a longitudinal portion and end portions substantially perpendicular to said longitudinal portion cooperating to define a chamber;

an input shaft;

a rotor located in said chamber of said housing;

inductor means forming said longitudinal portion of said housing to define a first longitudinal inner surface enclosing said rotor and a second external longitudinal surface forming the outside surface of said housing;

a field coil mounted proximately to said inductor means and said rotor for magnetically coupling said rotor and said longitudinal portion of said housing; and

said inductor means forming a fluid inlet and fluid passage means, said fluid passage means being formed in said first inner surface of said inductor means to extend substantially perpendicularly to said inductor means from said first inner surface proximate to said rotor into said inductor means.

3,863,084

SYNCHRONOUS MOTOR

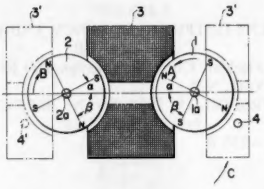
Sukehiro Hasebe, Sukagawa, Japan, assignor to Copal Company Limited, Tokyo-To, Japan

Filed Nov. 29, 1973, Ser. No. 420,087

Claims priority, application Japan, Nov. 30, 1972, 47-119411

Int. Cl. H02k *21/08*

U.S. Cl. 310—126 **2 Claims**



1. A synchronous motor comprising a permanent-magnet rotor having a plural number of magnetic poles, a second permanent-magnet rotor having the same number of magnetic poles as said first permanent-magnet rotor and arranged adjacent to said first permanent-magnet rotor so that said second permanent-magnet rotor rotates in a direction opposite to said first permanent-magnet rotor and being magnetically coupled with said first permanent-magnet rotor, at least one coreless field coil arranged to embrace a part of at least one of said first and second permanent-magnet rotors, and a magnetic pole piece arranged adjacent to at least one of said first and second permanent-magnet rotors in order to rest said first and second permanent-magnet rotors at positions shifted by a predetermined rotation angle other than 45° from their inherent rest positions.

3,863,085

BRUSH FOR ELECTRIC MACHINES

Aron Beniaminovich Shapiro, Basseinaya ulitsa, 53, kv. 71; Vladimir Pavlovich Chernyavsky, Pulkovskaya ulitsa, 17, kv. 185, and Ibragim Akhmedovich Kadi-Ogly, Tallinskoe Shosse, 66, kv. 180, all of Leningrad, U.S.S.R.

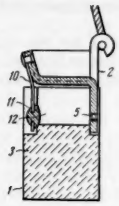
Filed Nov. 8, 1972, Ser. No. 304,829

Int. Cl. H02k *13/00*

U.S. Cl. 310—242 **2 Claims**

1. A brush for electric machines to provide electric contact with a moving part of a machine, comprising a brush body made of carbon and having an open through slot; current-carrying fittings on said body and having therein a threaded opening; and a spiral tension spring located in said slot, one end of said spring being fixed in said threaded opening, while

the other end of said spring is applied onto a pressure element; said spring and said pressure element being insulated from



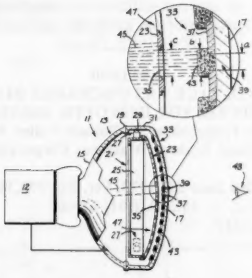
said brush body, the latter being held tightly between said fittings and said pressure element.

3,863,086

COATED PATTERN MASK FOR USE IN FORMING A COLOR CRT SCREEN STRUCTURE AND METHOD FOR COATING THE MASK

Kenneth Speigel, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 30, 1972, Ser. No. 310,706
Int. Cl. B01k *5/00*; **C23b** *13/00*; **H01j** *29/46*
U.S. Cl. 313—408 **15 Claims**



1. An improvement in the method for temporarily modifying the apertured pattern member of a formed cathode ray tube metallic aperture mask having peripheral supportive means integral therewith, said mask being subsequently oriented relative to and utilized in forming the patterned screen structure disposed on the viewing panel of a color cathode ray tube, the improvement of said modification method comprising the steps of:

positioning said apertured pattern member of said mask by said supportive means in a first coating electrophoretic bath to a predetermined depth in spaced relationship to a shaped foraminous electrode structure immersed in said bath, said bath including suspended particulate solids of a material substantially absorbent of ultraviolet radiation in substantially the 340 to 380 nanometer range, the openings in said foraminous electrode being larger than said solid particles;

initiating movement of said first coating electrophoretic bath by agitation means associated therewith to assure suspension of said particulate solids and the free movement of said suspension through said foraminous electrode;

applying an electrical potential to said mask and said foraminous electrode for at least one defined period of time to effect a substantially semiporous electrophoretic deposition of said first coating solid material on substantially the pattern portion of said mask;

removing and drying said coated electrode;

applying a second coating of a permeative binder material in a manner to wet said coated mask to impregnate and form a compacture with the substantially semiporous first coating, said permeative second coating material differing from said first coating material being in the form of a substantially ultraviolet transparent synthetic binder solution; and

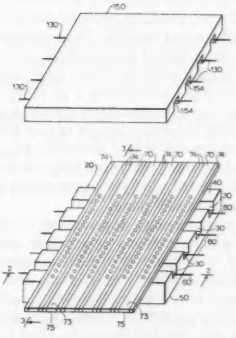
drying said duo-coated mask for subsequent positioning and utilization in the screening of said panel.

3,863,087

DISPLAY PANEL HAVING AN ARRAY OF INSULATED STRIP ELECTRODES

George E. Holz, North Plainfield, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 20, 1973, Ser. No. 399,077
Int. Cl. H01j *61/04*
U.S. Cl. 313—188 **15 Claims**



1. A display panel comprising

a gas-filled envelope made up of a base plate and a face plate hermetically sealed together, said face plate having a viewing window,

an array of first electrodes adjacent to said base plate,

an array of second electrodes adjacent to said face plate,

an array of third electrodes disposed between said array of first electrodes and said array of second electrodes and having upper and lower surfaces,

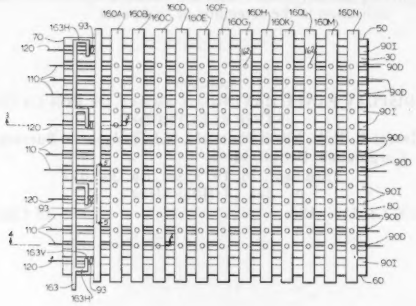
said third electrodes forming, with their lower surfaces, an array of first cells with said first electrodes and forming, with their upper surfaces, an array of second cells with said second electrodes,

said third electrodes comprising metal strips disposed side-by-side adjacent to each other and carrying insulating layers only on their adjacent edges, their upper and lower surfaces being substantially free of said insulating material and able to exhibit cathode glow.

3,863,088
DOT MATRIX DISPLAY PANEL HAVING A PLURALITY OF DISPLAY REGISTERS

Edgar L. Harvey, Old Bridge, and Albert J. Hardwick, Somerville, both of N.J., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 25, 1974, Ser. No. 436,535
Int. Cl. H01j 61/54
U.S. Cl. 313—198 7 Claims

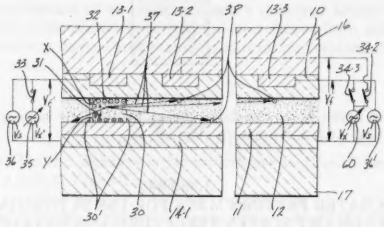


1. A display panel comprising
a gas-filled envelope including a bottom plate, a center plate, and a top plate, all being of dielectric material and hermetically sealed together by a sealing material,
said bottom plate having a top surface, a bottom surface, a left edge, a right edge, an upper edge, and a lower edge, said bottom plate also having a plurality of parallel slots extending into said plate from said top surface and extending along the entire length of said plate,
first anode electrodes seated in several groups of said slots and extending along the entire length thereof and beyond both ends thereof, said slots comprising portions of display registers in said panel,
said center plate having a top surface, a bottom surface, a left edge, a right edge, an upper edge, and a lower edge, a plurality of cathode electrodes disposed between said bottom plate and said center plate and oriented at an angle to said first anode electrodes, each cathode electrode crossing each first anode electrode, each crossing defining a first cell which can be fired by potentials applied to the two electrodes at the crossing, there thus being an array of rows and columns of said first cells including a first column, a last column and intermediate columns,
a column of reset cells adjacent to said first column of said first cells,
at least one keep-alive cell positioned adjacent to said column of reset cells,
said keep-alive cell comprising a keep-alive anode electrode seated in one of said slots in said bottom plate and a keep-alive cathode electrode comprising a metal strip portion which is shielded from said first anode electrodes and said cathode electrodes, said keep-alive cathode including a projecting tab which extends from said strip portion and overlays said keep-alive anode and is in electrical operating relationship only with said keep-alive anode,
a plurality of holes formed in said center plate and arrayed in rows and columns, each column of holes being aligned with one of said second electrodes, and
a plurality of second anode electrodes aligned with the rows of said holes and disposed between said top plate and said center plate, each such second anode electrode also being aligned with one of said first electrodes.

3,863,089
GAS DISCHARGE DISPLAY AND MEMORY PANEL WITH MAGNESIUM OXIDE COATINGS

Roger E. Ernsthausen, Luckey, and Bernard W. Byrum, Jr., Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 76,229, Sept. 28, 1970, abandoned. This application Oct. 24, 1972, Ser. No. 300,141
Int. Cl. H01j 65/04
U.S. Cl. 313—201 21 Claims

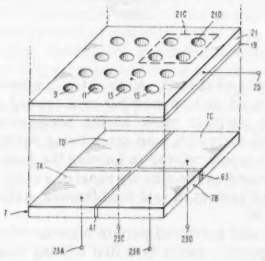


1. In a gaseous discharge device comprising an ionizable gaseous medium and at least one dielectric charg storage member in contact with the gaseous medium and at least one electrode insulated from the gaseous medium by a dielectric member, the improvement wherein the gaseous medium contacting portion of the dielectric member consists of magnesium oxide in an amount sufficient to substantially decrease the operating voltages of the discharge device.

3,863,090
LOW VOLTAGE GAS DISCHARGE DISPLAY STRUCTURES FOR IMPROVED ADDRESSING

William Boone Pennebaker, Jr., Putnam Valley, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 25, 1973, Ser. No. 373,340
Int. Cl. H01j 61/06
U.S. Cl. 313—217 6 Claims



1. In a gas discharge display device including an N × M array of cells therein having at least one cathode area electrode means common to both rows and columns of cells of said array of cells and having N area electrode means respectively common to the N rows of cells of said array of cells for addressing rows of cells and having M area electrode means respectively common to the M columns of cells of said array of cells for addressing columns of cells, the improvement comprising:
the said at least one cathode area electrode means including at least two electrode segment means arranged so that each of said electrode segment means is common to more than one cell within said electrode segment means with

each of said electrode segment means being electrically insulated from one another and separately addressable with the number N_z of said at least two electrode segment means being the product of the numbers N_{zx} and N_{zy} given approximately by the relationships

$$N_{zx} = (N_x^2/N_y)^{1/3}$$
$$N_{zy} = (N_y^2/N_x)^{1/3}$$

where N_{zx} is the number of electrode segment means in the X direction, N_{zy} is the number of electrode segment means in the Y direction and N_x and N_y are the respective numbers of columns and rows of cells in said $N \times M$ array of cells; and

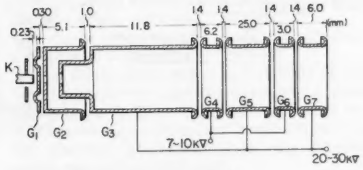
corresponding ones of said N area electrode means within respective ones of the said at least two electrode segment means being electrically coupled to one another so as to form N_x' address terminals in the X direction and corresponding ones of said M area electrode means within respective ones of the said at least two electrode segment means being electrically coupled to one another so as to form N_y' address terminals in the Y direction such that $N_x + N_y$ is less than N + M, whereby at least three level addressing of the cells of said array of cells is provided to thereby reduce the number of drive circuits required therefor.

3,863,091

ELECTRON GUN ASSEMBLY WITH IMPROVED UNITARY LENS SYSTEM

Toshio Hurukawa, Mobara; Eiichi Yamazaki, Ichihara, and Hiromi Kanai, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,614
Int. Cl. H01j *29/56*
U.S. Cl. 313—452 **12 Claims**



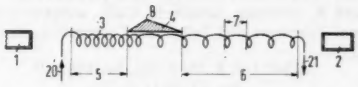
1. An electron gun assembly for use in a cathode ray tube having at least one electron gun provided with a prefocusing lens system and a main lens system for focusing an electron beam emitted from at least one cathode on a fluorescent screen, said main lens system comprising at least two individual lens systems each formed of a plurality of aligned lens electrodes whose axes correspond to the central axis of said electron gun, said main lens system being positioned with respect to said prefocusing lens system so that the cross-over point of said electron beam is positioned substantially at the focal point of the individual lens system closest to said cathode, thereby causing said electron beam to have a substantially uniform transverse dimension of flux and a central axis in parallel with the axis of said electron gun between said individual lens systems forming said main lens system.

3,863,092

TRANSIT TIME TUBE HAVING EXTREMELY LOW PHASE DISTORTION

Hinrich Heynisch, Graefelfing; Klaus Poeschl, Furth, and Werner Veith, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Aug. 2, 1973, Ser. No. 385,158
Claims priority, application Germany, Aug. 10, 1972, 2239459
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.6 **9 Claims**



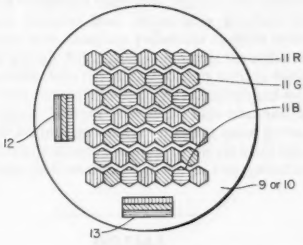
1. A transit time tube comprising: an electron beam generating system; an electron collector; and a delay line extending between said beam generating system and said collector including a plurality of delay sections, at least one of said sections being a phase distortion correction system and having a degree of delay which is less than the degree of delay of the section at the beam generating end, and a section following said distortion correcting section at the electron collector end and having a degree of delay which is greater than the degree of delay of the section at the electron beam generating end, said delay line including an attenuation link, said correcting section following said attenuation link.

3,863,093

MULTICOLOR DIRECT VIEW DEVICE

Richard Kaspar Orthuber, Sepulveda, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 30, 1969, Ser. No. 797,372
Int. Cl. H01j *29/70*
U.S. Cl. 315—12 **13 Claims**



1. A multicolor, low light, direct view device comprising: an evacuated envelope having a light transparent input fiber optics window and a parallel light transparent output window; a channel-type electron multiplier fixed in said envelope between and parallel to said windows; a photocathode fixed in said envelope in a plane parallel to said input window and said multiplier; a luminescent screen fixed in said envelope in a plane parallel to said output window between said multiplier and said output window; said input window including a first transparent layer having a plurality of small areas of at least two first colors, said first colors beiong different from each other and being located contiguous to each other over the total area of said first layer, said first colors being uniformly distributed over the total area of said layer; said output window including a second transparent layer having a plurality of small areas of second colors, said second colors being different from each other and being located contiguous to each other over the total area of said second layer, each small area

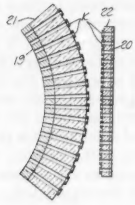
in said first layer having a corresponding small area in said second layer of the same size and location, all of the small areas of said first layer having one color only also having corresponding small areas in said second layer of one color only, said layers being fixed relative to said envelope, all the small areas of said layers being in axial alignment with each other; and carrier means to support said envelope.

3,863,094

IMAGE INTENSIFIER AND METHOD OF MAKING AN ELECTRON MULTIPLIER THEREFOR

Richard K. Orthuber, Sepulveda, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 8, 1969, Ser. No. 815,519
Int. Cl. H01j *29/70*
U.S. Cl. 315—12 **12 Claims**



1. An image intensifier comprising: an electron tube including an evacuated envelope; a main channel-type electron multiplier inside said envelope; first means to supply primary electrons to one side of said main multiplier; second means to receive the electron output of said main multiplier from the other side thereof, said main multiplier including a dielectric plate having holes extending therethrough from said one side to said other side thereof, said main multiplier having internal surfaces defining said holes, said internal surfaces being adapted to support secondary emission, first portions of said surfaces adjacent said one side thereof, having a lower resistance than second portions adjacent said other side thereof, said main multiplier having conductive input and output layers on said one and said other side thereof, respectively, each layer having holes therethrough in registration with said plate holes; and third means to maintain conductive portions of said tube including said layers at predetermined operating potentials.

3,863,095

ELECTRON GUN DEVICE OF FIELD EMISSION TYPE

Akira Tonomura, Kodaira, and Tadashi Ohtaka, Katsuta, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 12, 1972, Ser. No. 243,287
Claims priority, application Japan, Apr. 12, 1971, 46-22336
Int. Cl. H01j *29/56*
U.S. Cl. 315—14 **7 Claims**

1. An electron gum device of field emission type comprising:

a cathode tip of needle shape;

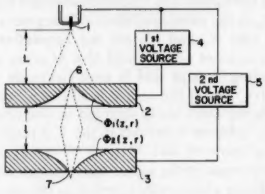
a first anode disposed downstream of said cathode tip in the beam path of electrons to be emitted from said cathode tip;

first voltage source means for applying a potential difference between said cathode tip and said first anode so as to produce an electric field for electron emission;

a second anode disposed downstream of said first anode in the beam path of electrons to be emitted from said cathode tip; and

second voltage source means for applying a potential difference between said first and second anodes;

wherein each of said first and second anodes has an aperture therein through which said electrons pass and wherein both surfaces of said first and second anodes



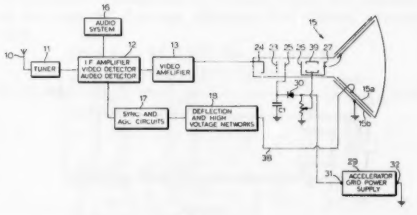
facing each other are convex from a respective aperture toward the outer surfaces of a respective anode so as to produce a lens electric field which acts to focus said electrons, in a space therebetween, whereby a finely focused electron beam can be obtained.

3,863,096

SPOT KILLER NETWORK FOR CATHODE RAY TUBE

John J. Sennik, Kitchener, Ontario, Canada, assignor to Electrohome Limited, N. Kitchener, Ontario, Canada

Continuation-in-part of Ser. No. 242,697, Apr. 10, 1972, abandoned. This application July 2, 1973, Ser. No. 375,600
Int. Cl. H01j *29/70*
U.S. Cl. 315—20 **3 Claims**

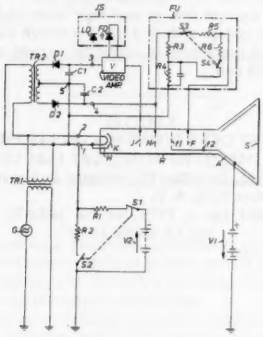


1. In combination with a cathode ray tube having an electron gun including a cathode, a control grid, an accelerator grid and at least one anode, said control grid being positioned between said cathode and said accelerator grid and said accelerator grid being positioned between said anode and said control grid and means for applying to said accelerator grid and to said anode positive D.C. voltages relative to the D.C. voltage of said cathode, the improvement wherein said means for applying said relatively positive D.C. voltage to said accelerator grid includes a source of potential, a unidirectional conducting device connected between said source and said accelerator grid and a capacitor connected to said accelerator grid and also connected to be charged via said unidirectional conducting device, said unidirectional conducting device being reverse biased upon removal of the potential of said source and providing the sole path externally connected to said capacitor for discharge of said capacitor, said path having a very high resistance to maintain said accelerator grid at its normal positive D.C. operating potential relative to the potential of said cathode for a substantial period of time after the potential of said source has been removed.

3,863,097
CIRCUIT ARRANGEMENT FOR PRODUCING A VARIABLE ELECTRON ACCELERATION HIGH VOLTAGE IN AN ELECTRON BEAM PICTURE TUBE

Hans-Jurgen Labudda, Litzelstetten, Germany, assignor to Licentia Patent-Verwattungs GmbH, Frankfurt am Main, Germany

Continuation of Ser. No. 167,675, July 30, 1971, abandoned. This application Aug. 17, 1973, Ser. No. 389,201
Claims priority, application Germany, July 31, 1970, 2037982
Int. Cl. H01j 29/70
U.S. Cl. 315—10 13 Claims



1. A circuit arrangement for producing an electron acceleration high voltage in an electron beam picture tube comprising:

a. an electron beam picture tube of the type having a phsophor layer on the screen portion thereof which produces different colors depending on the speed of the impinging electron beam, and a single cathode;

b. first means connecting the anode of said picture tube to a constant d.c. potential;

c. second means connected to said cathode of said picture tube for selectively applying different d.c. potentials to said cathode so as to cause different values of electron acceleration high voltage, and hence different speeds for the electrons, corresponding to said different colors within said picture tube; and

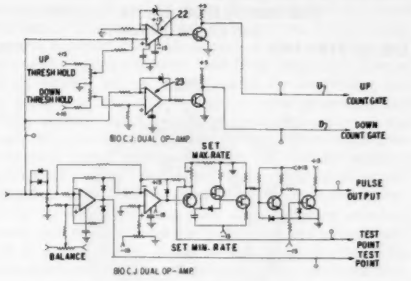
d. third means connected to said cathode and responsive to the d.c. potential applied thereto for simultaneously switching the d.c. potentials applied to the grids of said picture tube.

3,863,098
TWO-AXIS POSITIONING CONTROL

Morton H. Mehr, Norwalk, Conn., assignor to Measurement Systems, Inc., Norwalk, Conn.

Continuation of Ser. No. 69,569, Sept. 4, 1970, abandoned. This application Feb. 23, 1973, Ser. No. 335,005
Int. Cl. H01j 29/70
U.S. Cl. 315—26 4 Claims

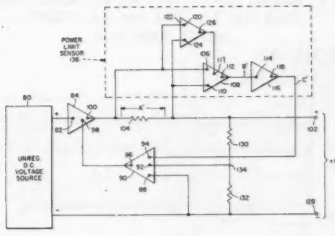
1. In a digital cursor positioner, the combination including an X-Y force responsive analog signal generator movable by an operator, pulse generating means receiving signals from said X-Y signal generator and producing pulses having a pulse rate which is infinitely variable non-linear between the maximum and minimum rates available from the pulse generator, the rate being a continuous function of the magnitude and polarity of said signal, an up-down counter connected to said pulse generator and producing a location indicating signal, and means receiving said location indicating signal and producing an indication of the location to be indicated to said operator.



3,863,099
ELECTROMAGNETIC DEFLECTION DISPLAY SYSTEM INCLUDING DUAL MODE DEFLECTION AMPLIFIERS AND OUTPUT POWER LIMITED POWER SUPPLIES

Abner Owens, Jr., Pompton Lakes, N.J., assignor to The Benedix Corporation, Teterboro, N.J.

Filed June 28, 1973, Ser. No. 374,736
Int. Cl. H01j 29/70
U.S. Cl. 315—383 6 Claims



1. An electromagnetic deflection display system, comprising:

means for providing deflection signals;

deflection display means;

power supply means providing linear mode output power and slew mode output power for powering the deflection display means, said power supply means operating at a predetermined duty cycle with the output power therefrom being at a predetermined average value; and

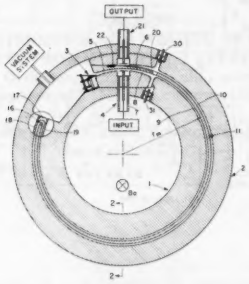
deflection amplifier means connected to the deflection signal means, the power supply and the display means, and operative in a linear mode for initially applying the linear mode output power to the deflection display means and responsive to a rate of change of the deflection signals above a predetermined rate for switching to a slew mode of operation to apply the slew mode output power to the deflection display means, said linear and slew modes being independent of each other for reduction slew time without increasing power consumption.

3,863,100

M-TYPE MICROWAVE SIGNAL DELAY TUBE

Erwin F. Belohoubek, Kendall Park, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 6, 1968, Ser. No. 711,469
Int. Cl. H01j *25/34*
U.S. Cl. 315—39.3 **9 Claims**



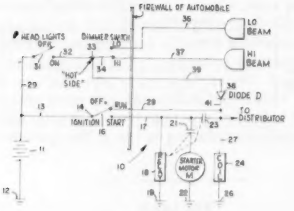
1. Signal delay apparatus comprising, in combination,
means for forming an electron beam;
means for modulating said electron beam with a signal which is to be delayed;
means for directing said modulated electron beam at a controllable velocity over a folded drift path; and
means for thereafter extracting said signal from said modulated beam.

3,863,101

WARNING SYSTEM FOR INDICATING AUTOMOBILE HEAD LIGHTS ARE ON

Robert W. Booker, 410 Orchard St., Dowagiac, Mich. 49047

Filed May 24, 1974, Ser. No. 472,973
Int. Cl. B60q *1/04*
U.S. Cl. 315—82 **3 Claims**



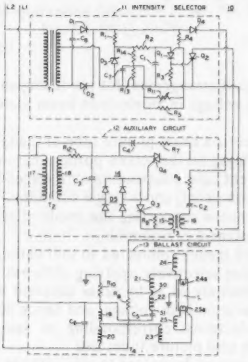
1. In an automotive vehicle having an engine, a battery, a coil, a distributor, an ignition system and lighting control circuitry for a high beam and a low beam head light system connected to said battery, said ignition system including a multiposition ignition switch, said ignition switch connecting in at least one position said battery to one side of said coil and distributor to maintain said engine in a running condition, said high beam and low beam head light system including a high beam head light circuit and a low beam head light circuit and said lighting control circuitry including a first lighting switch for controlling the supply of electrical current from said battery to said high and low beam head light system and a second lighting switch, an input terminal of which is connected to an output terminal of said first lighting switch, said second lighting switch controlling which of said high beam and low beam head light circuits receives said electrical current from said battery, the improvement comprising:
current control means connected between an input terminal to said second lighting switch and said one side of said coil for permitting current to flow in one direction from said battery to said one side of said coil so that when said first lighting switch is connected to supply electrical current to said high beam and low beam head light system and said ignition switch is connected to disconnect the supply of electrical current to said one side of said coil, electrical current will continue to flow to said one side of said coil and distributor through said first lighting switch and said current control means to maintain said engine in a running condition to thereby warn the driver of said automotive vehicle through said running of said engine that said high beam and low beam head light system is energized, said engine discontinuing to run upon a connecting of said first lighting switch to disconnect said electrical current flow to said high beam and low beam head light system with said ignition switch connected to disconnect the supply of electrical current to said one side of said coil.

3,863,102

FLUORESCENT LAMP DIMMING CIRCUIT EMPLOYING AN IMPROVED AUXILIARY CIRCUIT

Rollie R. Herzog, Danville, Ill., assignor to General Electric Company, New York, N.Y.

Filed Apr. 6, 1973, Ser. No. 348,676
Int. Cl. H05b *39/04*
U.S. Cl. 315—105 **11 Claims**



1. A gaseous discharge lamp dimming circuit for connection to a source of AC voltage comprising:
a bilateral current conducting control switch having a control electrode;
means for connecting said control switch to the source of AC voltage;
means including a timing means, for applying a signal to said control electrode to render said control switch conductive, said control switch conducting current thereafter until the control switch current goes through zero crossover;
a bilateral current conducting power switch having a control electrode;
said control switch being connected to said control electrode of said power switch for continuously gating said power switch during conduction of said control switch so that said power switch remains on even if the current through said power switch is below the normal power switch holding current level;

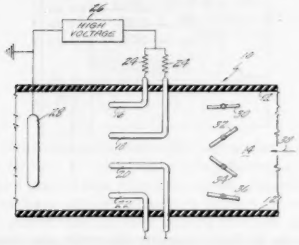
a ballast circuit connected to said power switch for limiting the lamp current.

3,863,103

APPARATUS AND METHOD FOR ENHANCING POWER DEPOSITION IN CONVECTIVE ELECTRIC DISCHARGES

Alan C. Eckbreth, Glastonbury, and Frank S. Owen, Vernon, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 19, 1973, Ser. No. 342,914
Int. Cl. H05b *1/00*
U.S. Cl. 315—111.2 **4 Claims**



1. In an electric discharge apparatus having a conduit in which a substantially uniform plasma can be established in a stream of gas flowing through a discharge region within the conduit the improvement comprising:

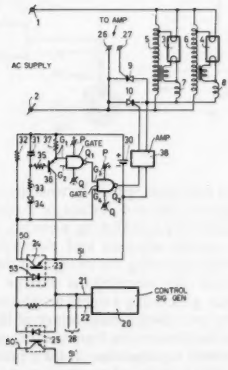
a baffle array comprising a plurality of individually rotatable baffle plates located in the conduit and upstream of the discharge region to cause blockage to the localized regions in the flowing stream and thereby produce a substantially uniform velocity profile across the gas stream in the discharge region.

3,863,104

ARRANGEMENT FOR THE CONTROLLABLE SUPPLY OF AT LEAST TWO GROUPS OF ELECTRIC LAMPS

Pieter Jan Bolhuis, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 4, 1973, Ser. No. 347,927
Claims priority, application Netherlands, Apr. 20, 1972, 7205292
Int. Cl. H05b *39/04*
U.S. Cl. 315—154 **14 Claims**



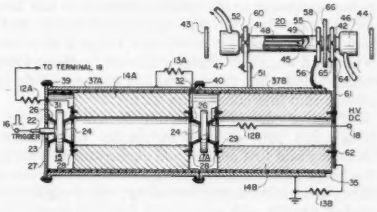
1. Apparatus for controlling the illumination of at least two groups of electric lamps comprising, means connecting the lamps of each group in series with a controlled semiconductor switching element, two input terminals for coupling a source of electric energy to said lamps, means connecting the combination of a lamp group and its series controlled semiconductor switching element in a branch across the two input terminals of the apparatus, a first control signal generator common to all of the semiconductor switching elements and having a connection to a control electrode of each of the controlled semiconductor switching elements, each lamp group including an auxiliary electric energy supply source for controlling said lamp group and an auxiliary control signal generator, said auxiliary control signal generator being responsive to the absence of a control signal across the connection to the common control signal generator so that the relevant auxiliary supply source and the relevant auxiliary control signal generator generate an auxiliary control signal for the control electrode of its respective controlled semiconductor switching element such that the lamp luminosity assumes a fixed value which at a maximum is equal to that which occurs in the continuously conducting condition of the semiconductor switching element and which at a minimum is equal to 10 percent of said maximum value.

3,863,105

COAXIAL MARX-BANK DRIVER CIRCUIT FOR PULSE LASERS

Theodore F. Ewanizky, Manasquan Park, N.J., assignor to The United States of America, as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 1, 1974, Ser. No. 447,431
Int. Cl. H02m *3/18*; H05b *41/26*
U.S. Cl. 315—245 **10 Claims**



1. In a laser pump driver circuit having a plurality of circuit stages each having a high voltage dc charging circuit including a resistor and capacitor for charging said capacitor from a high voltage dc supply, each said circuit stage further including a spark gap and a discharging resistor through which the corresponding capacitor is discharged during activation of said spark gap for deriving an ac voltage, the final discharging resistor constituting a load resistor across which a laser pump can be connected, said capacitors being charged in parallel and connected in series by way of said activated spark gaps in reponse to triggering of an initial spark gap; the improvement comprising an elongated hollow cylindrical electrically conductive sheath surrounding and closely spaced from said capacitors, said capacitors being arranged coaxial with said sheath and being of hollow cylindrical configuration.

3,863,106
VERTICAL DEFLECTION CIRCUIT

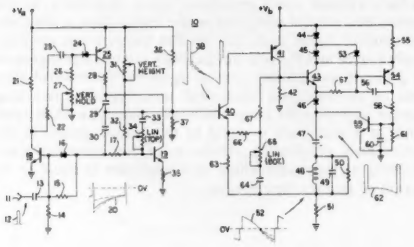
Peter Eduard Haferl, Adliseil, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,407

Claims priority, application Great Britain, Apr. 26, 1972, 19388/72

Int. Cl. H01j *29/70*

U.S. Cl. 315—388 **10 Claims**



1. A sawtooth generator for a deflection system, comprising:

first and second active current conducting devices;

a timing network coupled to an output electrode of said first device and to a control electrode of said second device for determining the trace interval of each deflection cycle;

a source of deflection rate signals coupled to a control electrode of said first device for changing the conduction state of said first and second devices from a first to a second state for initiating the retrace interval of each deflection cycle;

means including first and second serially coupled capacitors coupled to an output electrode of said second device and a control electrode of said first device, said first device being responsive to the charging current of said first and second capacitors through said second device such that said retrace interval is terminated and said trace interval is initiated when said charging current reaches a predetermined amount and causes said first and second devices to change said first conduction state;

a third active current conducting device having its main conduction path coupled in parallel with said means including said first and second capacitors for providing a discharge path therefor during said trace interval; and

linearity correction means including a third capacitor coupled in parallel with one of said first and second capacitors for providing an additional discharge path therefor for affecting the linearity of discharge of said first and second capacitors during a first portion of said trace interval.

3,863,107
METHOD AND DEVICE FOR THE STRIKING OF AN ARC IN A REACTOR

Palne Mogensen, Jarfalla; Erik Smars, Rimbo, and Mats J. Kalj, Solna, all of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

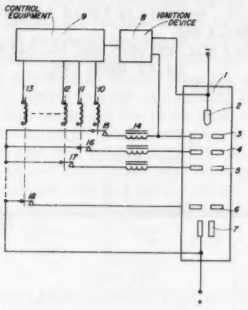
Filed June 28, 1973, Ser. No. 374,367

Claims priority, application Sweden, June 29, 1972, 8537/72

Int. Cl. H01j *17/48*

U.S. Cl. 315—336 **4 Claims**

1. A method for the striking of an arc between a cathode and an anode in a reactor comprising the steps of providing a number of intermediate electrodes arranged between cathode and anode in the reactor, providing the intermediate electrodes with a voltage similar to that provided the anode, applying a striking voltage during a brief interval of time between the cathode and the intermediate electrode closest to the cathode, so that during this interval an arc is produced between the cathode and a first intermediate electrode, and subsequently at certain intervals of time, switching off the voltage to the first intermediate electrode and switching on the voltage to the following voltage energized intermediate electrode, the arc formed being passed on to the following intermediate electrode until it reaches the anode, as a result of which a fully developed arc is obtained between cathode and anode.



3,863,108
ELECTROSTATIC CHARGE CONTROLLER

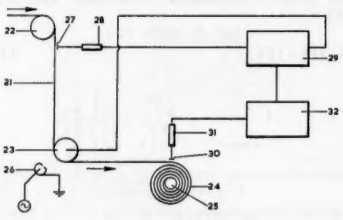
Anthony Reginald Blythe, Welwyn, and Wilson Reddish, London Colney, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jan. 4, 1974, Ser. No. 430,626

Claims priority, application Great Britain, Feb. 2, 1973, 5236/73

Int. Cl. H05f *3/00*

U.S. Cl. 317—2 R **3 Claims**

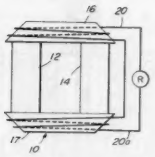


1. A method for reducing the electrostatic charge density on an electrostatically charged surface of a thermoplastic polymeric film comprising establishing a corona discharge to generate an ion current adjacent said electrostatically charged surface, partially screening the charged surface from said ion current, sensing the electrostatic charge density on the charged surface, generating a signal proportional to the sensed charge density, providing a bias voltage of less than 100 volts at a surface of the film remote from that exposed to the corona discharge to direct a proportion of the generated ion current onto the charged surface and employing said generated signal to control the bias voltage at a value such that the electrostatic charge density on the charged surface is reduced to less than 1 picocoulomb per square centimetre of surface.

3,863,109
SHORT CIRCUIT SENSING DEVICE FOR ELECTROMAGNETIC INDUCTION APPARATUS

Alexander E. Emanuel, Framingham, and Jitendra P. Vora, Westboro, both of Mass., assignors to High Voltage Power Corporation, Westboro, Mass.

Filed Aug. 27, 1973, Ser. No. 391,954
Int. Cl. H02h 7/04
U.S. Cl. 317—14 R 12 Claims

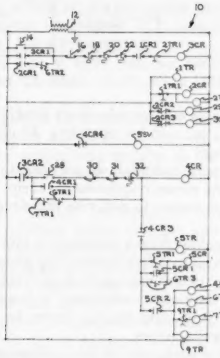


1. An electromagnetic induction apparatus comprising a magnetic circuit, at least one winding having a number of turns placed around said magnetic circuit, said winding being adapted to have current produced therein by a source of electrical power, said current passing through said winding creating a flux pattern which passes predominantly through said magnetic circuit, said flux pattern varying in response to shorted turns within said winding to create a greater proportion of leakage flux, stray flux sensing means responsive only to said flux pattern variation for generating a signal proportional to said flux pattern variation, and means responsive to said signal for rendering said source inoperative to produce said current, thereby protecting said apparatus from further damage.

3,863,110
APPARATUS AND METHOD FOR CONTROLLING A CENTRIFUGAL COMPRESSOR

Paul Bauer, Jr., Rawson, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 246,478, April 21, 1972,. This application May 11, 1973, Ser. No. 359,544
Int. Cl. H02h 7/08
U.S. Cl. 317—13 A 6 Claims

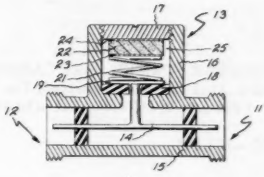


1. Apparatus for preventing shutdown of a centrifugal compressor driven by an electric motor during short-term power failures, comprising: a source of electrical power connected to said motor; switch means interposed said power source and said motor; electrically operated switch actuating means connected to said switch means and to said power source, said switch actuating means normally opening said switch means upon power failure; and circuit means electrically interconnecting said switch actuating means and said power source for automatically reactuating said switch means when a power failure is of a duration less than a first pre-determined period and for not actuating said switch means when said power failure is of a duration greater than said pre-determined period and when a second power failure occurs within a second pre-determined time period from the end of an original power failure greater than said first pre-determined time period.

3,863,111
POLYCRYSTALLINE VARISTOR SURGE PROTECTIVE DEVICE FOR HIGH FREQUENCY APPLICATIONS

Francois D. Martzloff, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 29, 1973, Ser. No. 374,933
Int. Cl. H02h 3/20, 3/22
U.S. Cl. 317—61.5 9 Claims



1. Apparatus for suppression of voltage surges on VHF signal cables comprising:

a body of varistor material having a pair of opposed faces and an electrode on each of said faces;

an inductor having first and second terminals, said first terminal being electrically connected to one of said electrodes;

means for connecting said second terminal to a first conductor of a VHF signal cable; and

means including an electrically conductive housing member for connecting the other of said electrodes to a second conductor of said VHF signal cable;

said body of varistor material and said inductor cooperatively forming a series resonant circuit connected between said first and second conductors of said VHF signal cable when the voltage across said first and second conductors is less than the varistor voltage of said body of varistor material;

said series resonant circuit being resonant at a frequency below 30 MHz;

said inductor being an electrically conductive coil spring disposed within said housing for urging said other of said electrodes into contact with a surface of said housing.

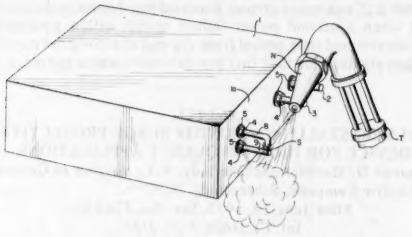
3,863,112
GAS AND ACETYLENE TORCH LIGHTER

Eugene P. Kessock, 137 Memorial Ave., Saint Clair, Pa. 17970

Filed Apr. 22, 1974, Ser. No. 462,745
Int. Cl. F23q 3/00
U.S. Cl. 317—96 2 Claims

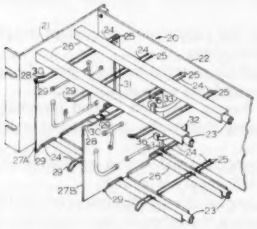
1. A gas and acetylene torch lighter, comprising a metal box; a pair of switch contacts extending through one face of the box and spaced apart to receive and support the nozzle of a torch when placed with the axis of the nozzle extending in a certain direction; a pair of ignition contacts extending through said face and closely spaced from a spark gap, their gap being substantially aligned with said axis of the nozzle for igniting gas issuing from the nozzle; said box containing an electric battery and a high voltage induction coil, and including a normally "open" electric circuit means connecting the battery via the switch contacts to energize the coil whenever

a torch nozzle is placed across the switch contacts and including other circuit means coupling the coil to the ignition contacts to induce a spark across the ignition contacts to



ignite said gas, said nozzle serving as a closing switch for said circuit said pairs of contacts being electrically insulated from the box.

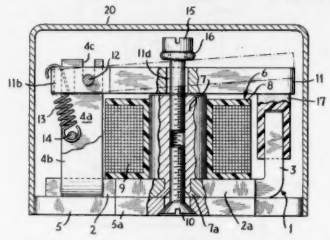
3,863,113
MODULAR FORMED WIRE CARDCAGE
Llyd G. Ward, 3142 Lariat Dr., Garland, Tex. 75042
Filed Jan. 4, 1974, Ser. No. 430,632
Int. Cl. H02b *1/02*
U.S. Cl. 317—101 DH **13 Claims**



1. A board edge guide for use in a modular cardcage structure with board edge guides used in aligned pairs with: said board edge guide formed from a single length of wire; said single length of wire being bent back upon itself at a midregion to form two parallel legs open at one end and joined with the midregion forming a closed end; and intermediate transversely aligned bends in said parallel legs to facilitate mounting of said board edge guide in a modular cardcage structure.

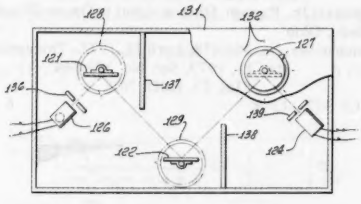
3,863,114
TAPPING DEVICE FOR GENERATING PERIODIC MECHANICAL PULSES
John F. De Mayo, Oyster Bay, N.Y., assignor to Sensonics, Inc., Hicksville, N.Y.
Filed Nov. 1, 1973, Ser. No. 411,737
Int. Cl. H02k *33/02*
U.S. Cl. 317—123 **10 Claims**

1. A tapping device to be mounted on apparatus for imparting periodic mechanical pulses thereto, comprising a base for attachment to said apparatus, an electromagnet disposed on said base and comprising a ferromagnetic core perpendicular to the base and a winding around said core, an anvil projecting from said base at one side of said electromagnet and parallel to said core, armature supporting means projecting from said base at the opposite side of said electromagnet from said anvil, an armature extending across said electromagnet from said supporting means to said anvil, said anvil having a first end disposed above said anvil and a second end pivotally supported by said supporting means for movement of said armature between a first position in which said first end of the armature engages said anvil and a second position in which said first end of said armature is spaced from said anvil, means biasing said armature in a direction from said first position to said second position, means limiting movement of said armature in said direction, and circuit



means for periodically energizing said electromagnet at regular fractional-second intervals to attract said armature and thereby cause saif first end of said armature to strike said anvil to generate a mechanical pulse which is transmitted through said base to apparatus on which said tapping device is mounted.

3,863,115
RADIATION CONTROLLED SECURITY LOCK
Alfred F. Hasenbein, 905 N. LaReina St., Anaheim, Calif. 92801
Filed Mar. 1, 1973, Ser. No. 337,136
Int. Cl. E05b *49/00*; **H01h** *47/24*
U.S. Cl. 317—124 **4 Claims**



1. A security device for selectively generating an electrical control signal, such as for operating an electro-mechanical lock, comprising:

electro-magnetic radiation source means,

photo-electric means responsive to receipt of radiation from said source means to generate the electrical control signal,

radiation guiding means including a plurality of independently movable radiation directing elements, and

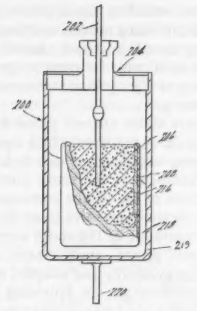
indexing means for moving said elements of said guiding means to a unique combination of positions which guide radiation from said source means to impinge on said photo-electric means,

said movable elements of said radiation guiding means comprising rotatably mounted radiation reflectors disposed within a housing and being individually rotatable to said combination of positions to direct radiation from said source means to said photo-electric means, and said indexing means including manually engageable means extending exteriorly of said housing for individually setting said reflectors by coded positions indicated on the exterior of said housing to said combination of positions.

3,863,116
NEW CAPACITOR CONSTRUCTION

James John Coniglio, and Robert Emerson Wiley, both of Port Huron, Mich., assignors to Acheson Industries, Inc., Port Huron, Mich.

Filed May 29, 1973, Ser. No. 364,750
Int. Cl. H01g 9/05
U.S. Cl. 317—230 12 Claims



8. An improved solid tantalum capacitor construction including a coating comprised of,

about 5 percent to about 20 percent by weight of fluoroelastomer for providing the coating with resistance to temperatures of 400°–700° F.,

about 80 percent to about 95 percent by weight of conductive pigment for providing conductivity to the coating, wherein saiid conductive pigment is a finely particulated material selected from at least one of the group consisting of noble metals and alloys thereof, silver, and copper particles,

and zero to about 10 percent by weight of flow control agent for facilitating application usage of the coating,

and said coating enables operation in a temperature range of 400°–700° F., and said coating being substantially free of flux residue and substantially free of amine curing agent.

3,863,117
PLURAL MOTOR TENSIONING SYSTEM FOR REWINDING TAPE CASSETTES

Edward J. Paschetto, Little Silver, N.J., assignor to Electronic Associates Inc., Long Branch, N.J.

Filed Apr. 9, 1973, Ser. No. 348,875
Int. Cl. B65h 59/38; H02p 5/46
U.S. Cl. 318—7 2 Claims

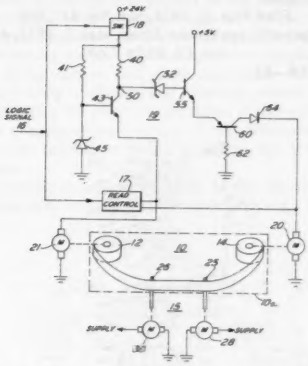
1. In a tape transport for a tape cassette having a supply reel and a take-up reel, a system for rewinding the tape on the supply reel while maintaining tension on the tape being rewound to provide a good wrap of the tape around the supply reel comprising

a rewind motor having characteristic torque and speed outputs for different supply voltages applied thereto for driving said supply, a holdback motor having characteristic torque and speed outputs for different supply voltages applied thereto, said motor being driven in a plugging mode by said take-up reel,

means for applying a substantially constant supply voltage to said rewind motor during the entire rewind duration for producing the desired speed and torque output from the motor, and

control means connected to said supply voltage means and to said rewind motor for applying a current of predetermined value through said holdback motor to operate said motor in the plugging mode which predetermined value (1) is an inverse function of said rewind motor current and (2) independent of the holdback motor speed thereby forcing the holdback motor torque to maintain proper tension on said tape,

said rewind motor current varying in value as a direct function of the value of said rewind motor torque and said supply voltage means including means responsive to said rewind motor current for producing at a junction a control voltage which varies in value as an inverse function of the value of said rewind motor current, said control means including a first transistor connected in its common base configuration, current ampilifier means connected between an emitter of said first transistor and said control voltage junction for producing said predetermined value holdback motor current which remains constant at any one value control voltage independent of said holdback motor speed and voltage, and,

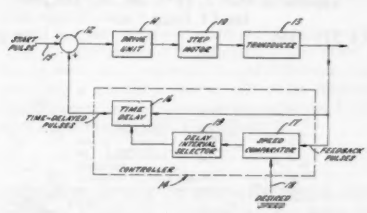


said current amplifier comprising a second transistor the emitter of which is connected to said emitter of said first transistor, and a Zener diode operating as a level converter connected between the base of said second transistor and said control voltage junction.

3,863,118
CLOSED-LOOP SPEED CONTROL FOR STEP MOTORS

Emil Lander, Rockford; Richard A. Yackel, and Gurdial Singh, both of Urbana, all of Ill., assignors to Warner Electric Brake and Clutch Company, South Beloit, Ind.

Filed Jan. 26, 1973, Ser. No. 327,150
Int. Cl. G05b 19/40
U.S. Cl. 318—685 23 Claims



1. A closed-loop control system for a step motor comprising the combination of drive means for effecting stepping movement of the motor in response to successive pulses supplied to the drive means, starting means for supplying at least one pulse to the drive means for initiating stepping movement of said motor, a transducer responsive to a predetermined reference switching angle, feedback means for supplying said feedback pulses to said drive means to continue the stepping movement of said motor, adjustable switching angle control means connected to said feedback means for electronically

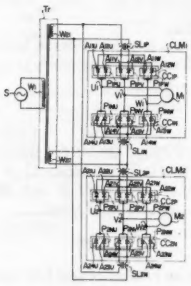
adjusting the effective switching angle at which said feedback pulses are supplied to said drive means, and speed control means receiving the feedback pulses from said transducer and automatically adjusting said switching angle control means in response to the rate of generation of said feedback pulses.

3,863,119

COMMUTATORLESS MOTOR APPARATUS

Kyozo Tachibana, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1974, Ser. No. 447,356
Claims priority, application Japan, Mar. 2, 1973, 48-25329
Int. Cl. H02p *7/68*
U.S. Cl. 318—82 **8 Claims**



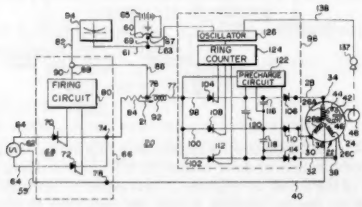
1. A commutatorless motor apparatus comprising a plurality of commutatorless motors each including a synchronous motor supplied by a thyristor power converter, a power transformer with as many independent secondary windings as said commutatorless motors, said commutatorless motors constituting a series circuit, at least one reactor inserted in said series circuit, and means for connecting said secondary windings to corresponding junction points of said series-connected commutatorless motors.

3,863,120

MEANS FOR CONTROLLING THE OUTPUT CONDITION OF A SYNCHRONOUS RELUCTANCE MOTOR

Charles E. Rettig, Brookfield, Wis., assignor to Litton Industrial Products, Inc., Milwaukee, Wis.

Division of Ser. No. 82,302, Oct. 20, 1970, abandoned. This application Mar. 2, 1973, Ser. No. 337,280
Int. Cl. H02p *5/40*
U.S. Cl. 318—166 **19 Claims**



1. A motor control interposible between an electrical energy source and the stator winding of a synchronous reluctance motor for controlling the torque developed by the motor wherein the motor has a direct axis flux producing exciting current, said control comprising:

first signal means for generating a torque command signal indicative of the desired motor output torque condition independently of existing motor conditions;

second signal means coupled to the motor for providing a signal indicative of the rotor frequency of the motor rotor;

stator winding energization means connectable to the stator winding of the motor for energizing the stator winding with a cyclical stator current, said stator winding energization means including signal responsive stator current frequency establishing means, said frequency establishing means being coupled to said second signal means and operable by said rotor frequency signal for establishing the frequency of the cyclical stator current at that of the rotor frequency;

signal responsive stator current phase displacement establishing means coupled to said first signal means and said stator winding energization means for establishing the phase displacement of the stator current as a predetermined function of the torque command signal;

power supply means responsive to an input signal for regulating the magnitude of the stator current in accordance therewith, said power supply means connectable to the electrical energy source and coupled to said stator winding energization means for providing an adjustable current to the stator winding energization means, said power supply means including a current regulation stabilizing inductor regulating the output current of said power supply means to a substantially desired magnitude; and

stator current magnitude establishing means coupled to said first signal means and to said power supply means and responsive to said torque command signal for establishing the magnitude of the stator current as a predetermined function of said signal, said stator current magnitude establishing means includes a first function generator imposed between said first signal means and said power supply means and responsive to said torque command signal for providing the input signal to said power supply means having a predetermined function with respect to the torque command signal to cause said power supply means to provide stator current magnitudes tending to maintain desired flux levels in the motor,

said phase displacement establishing means phase displacing the stator current with respect to the exciting current responsive to a control signal including a second function generator interposed between said first signal means and said stator winding energization means, said second function generator being responsive to said torque command signal for providing a control signal to said stator winding energization means having a predetermined function with respect to the torque command signal for altering the phase displacement of the stator current with respect to the exciting current by amounts tending to maintain desired flux levels in the motor.

3,863,121

MEANS FOR CONTROLLING THE OUTPUT CONDITION OF AN INDUCTION MOTOR

Charles E. Rettig, Brookfield, Wis., assignor to Litton Industrial Products, Inc., Milwaukee, Wis.

Division of Ser. No. 82,302, Oct. 20, 1970, abandoned. This application Mar. 2, 1973, Ser. No. 337,282
Int. Cl. H02p *5/40*
U.S. Cl. 318—227 **27 Claims**

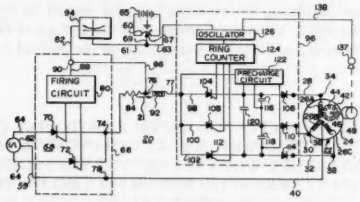
1. A motor control interposible between an electrical energy source and the stator winding of an induction motor having a flux producing exciting current and a stator current displaceable with respect thereto for controlling the torque developed by the motor, said control comprising:

first signal means for generating a torque command signal indicative of the desired motor output torque condition independently of the existing torque condition of the motor;

second signal means coupled to the motor for providing a signal indicative of the rotor frequency of the motor rotor;

stator winding energization means connectable to the stator winding of the motor for energizing the stator winding with a cyclical stator current, said stator winding energization means including signal responsive stator current frequency establishing means, said frequency establishing means being coupled to said first and second signal means for providing a frequency characteristic to the stator current sufficient to establish the slip frequency of the motor proportional to the torque command signal said stator winding energization means further including a phase displacement establishing means for effecting a phase displacement of the stator current with respect to the exciting current;

a second function generator interposed between said first signal means and said phase displacement establishment



means and responsive to said torque command signal for providing a control signal to said phase displacement establishment means having a predetermined function with respect to said torque command signal for establishing the phase displacement of the stator current with respect to the exciting current by amounts tending to maintain desired flux levels in the motor;

power supply means connectable to the electrical energy source and coupled to said stator winding energization means for providing an adjustable current to the stator winding energization means, said power supply means including a current regulation stabilizing inductor regulating the output current of said power supply means to a substantially desired magnitude; and

stator current magnitude establishing means coupled to said first signal means and to said power supply means and responsive to said torque command signal for establishing the magnitude of the stator current as a predetermined function of said signal.

3,863,122

CONTROL MEANS FOR CONTROLLING THE OUTPUT CONDITION OF AN ALTERNATING CURRENT INDUCTION MOTOR

Charles E. Rettig, Brookfield, Wis., assignor to Litton Industrial Products, Inc., Milwaukee, Wis.

Division of Ser. No. 82,302, Oct. 20, 1970, abandoned. This application Mar. 2, 1973, Ser. No. 337,646

Int. Cl. H02p *5/40*

U.S. Cl. 318—227 **12 Claims**

1. A motor control interposible between an electrical energy source and the stator winding of an induction motor for controlling the torque developed by the motor wherein the motor has a flux producing exciting current and a stator current displaceable with respect thereto, said control comprising:

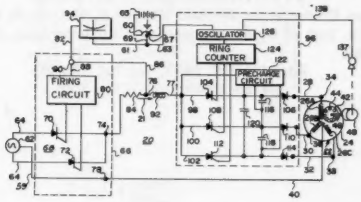
first signal means for generating a control signal indicative of a desired energization frequency of the stator winding;

second signal means coupled to the alternating current motor for providing a signal indicative of the rotor frequency of the rotor;

summing junction means coupled to said first and second signal means for providing a difference signal proportional to slip frequency;

stator winding energization means connectable to the stator winding of the motor for energizing the stator winding with a cyclical current, said stator winding energization means including signal responsive stator current frequency establishing means, said frequency establishing means being coupled to said first signal means and responsive to said control signal for establishing the frequency of the cyclical current in the stator winding in accordance with the control signal, said stator winding energization means further including phase displacement establishing means for effecting a phase displacement of the stator current, said phase displacement establishing means being coupled to said summing junction means for establishing the phase displacement of the stator current as a predetermined function of the difference signal by amounts tending to maintain desired flux levels in the motor;

power supply means connectable to the electrical energy source and coupled to said stator winding energization



means for providing an adjustable current to the stator winding energization means, said power supply means including a current regulation stabilizing inductor regulating the output current of said power supply means to a substantially desired magnitude;

stator current magnitude establishing means coupled to said summing junction for establishing the magnitude of the stator current in response to an input signal for adjusting the magnitude of the stator current as a predetermined function of the difference signal, said stator current magnitude establishing means includes a first function generator interposed between said summing junction means and said power supply means and responsive to the difference signal for providing an input signal to said power supply means which is a predetermined function of the difference signal; and

a second function generator interposed between said summing junction means and said phase displacement establishing means and responsive to said difference-signal for providing a control signal to said phase displacement establishment means having a predetermined function with respect to the difference signal.

3,863,123

SUPPLY SYSTEM FOR AN ASYNCHRONOUS MOTOR

Pierre Godard, Tremblay Les Gonesse, and Eric Patry, Nogent, both of France, assignors to Saft-Societe Des Accumulateurs Fixes Et De Traction, Romainville, France

Filed Nov. 1, 1973, Ser. No. 411,805

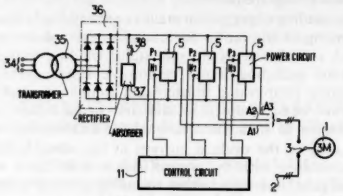
Claims priority, application France, Nov. 6, 1972, 72.39208; May 8, 1973, 73.16589

Int. Cl. H02p *7/42*

U.S. Cl. 318—440 **30 Claims**

1. A supply system for an asynchronous motor which comprises: a main alternating current supply of given output, an auxiliary a.c. supply system including, a direct current supply and undulator means connected to said d.c. supply to provide

an output from said auxiliary a.c. supply that has an output frequency and voltage both substantially lower than the output frequency and voltage of said first a.c. supply, and means for connecting alternately either one of said supplies to said motor.

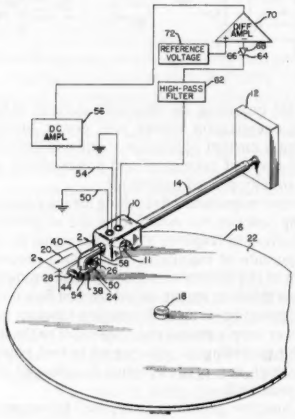


3,863,124

AERODYNAMIC SPACING CONTROL APPARATUS FOR MAINTAINING A DESIRED SPACING BETWEEN A SIGNAL TRANSDUCER AND A RECORDING SURFACE BY SENSING ELECTRICAL NOISE

Ernest E. Pierce, Dayton, and Thomas R. McColloch, Centerville, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 15, 1973, Ser. No. 332,893
Int. Cl. G05b 1/06; G11b 5/60
U.S. Cl. 318—638 **4 Claims**



1. In combination with a magnetic recording surface and a signal transducer spaced from the recording surface, the signal transducer being movable relative to the recording surface in a first or a second direction towards or away from the recording surface respectively, the spacing between the signal transducer and the recording surface being subject to variations in the first and the second directions from a desired value during relative motion between the signal transducer and the recording surface in a further direction, and wherein a gas flow layer exists between the signal transducer and the recording surface during the relative motion in the further direction, spacing control apparatus for maintaining the spacing at the desired value comprising:

means providing electrical output signals indicative of the actual spacing between the signal transducer and the recording surface including the signal transducer, the electrical output signals being a function of the amount of magnetic noise output of the signal transducer during reading of the recording surface;

means responsive to the electrical output signals producing electrical control signals indicative of the difference between the actual spacing and the desired spacing between the signal transducer and the recording surface including a reference signal source providing a reference signal corresponding to the desired spacing between the signal transducer and the recording surface, differential amplifier means, and means applying the reference signal to the differential amplifier means;

spacing control means comprising at least a first element having a surface which is deformable at various angles with respect to said gas flow layer and in a direction towards or away from the recording surface in response to electrical control signals applied thereto;

means coupling the spacing control means with the signal transducer for movement therewith in the first or the second direction, deformation of the first element surface causing both the spacing control means and the signal transducer to be moved in the first or the second direction; and

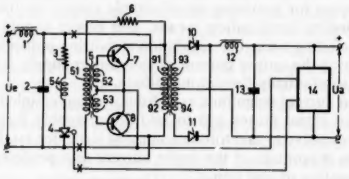
means applying the electrical control signals to the first element to control deformation of the surface of the first element and maintain the spacing at the desired value.

3,863,125

SAFETY CIRCUIT FOR RAPIDLY SWITCHING OFF OSCILLATORS, PARTICULARLY TRANSISTOR DC-DC CONVERTERS, WHEN THE OUTPUT VOLTAGES OR OUTPUT CURRENT EXCEED OR FALL BELOW THE REQUIRED VALUES

Herwig Tollrian, Nurnberg, and Burghard Krahl, Unterhaidelbach, both of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 345,135
Claims priority, application Germany, Apr. 14, 1972, 2217966
Int. Cl. H02h 7/10
U.S. Cl. 321—11 **6 Claims**

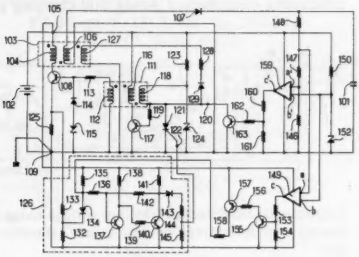


1. In a dc-dc converter of the type wherein an oscillator receives an input dc voltage and wherein a converter coupled to the oscillator provides a rectified dc output signal having a predetermined current and voltage parameter range, the improvement comprising a threshold value circuit means connected to the converter output for providing a control signal in response to an output parameter in excess of the predetermined values, a resistor, an additional winding on a transformer of the oscillator, a thyristor having a main current path in series circuit with said resistor and said additional winding and having a control input connected to the output of said threshold value circuit means and providing a low impedance path through the main current path in response to said control signal, electrical means connecting the series circuit across the input dc voltage, whereby said thyristor provides a low impedance path for current through said additional coil and said resistor in response to said control signal, thereby inhibiting the operation of said oscillator.

3,863,126
DEVICE FOR CHARGING AT A PREDETERMINED VOLTAGE, AN ELEMENT FOR STORING ELECTRICAL POWER

Roland Colyn, Le Perreux, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed Nov. 2, 1973, Ser. No. 412,519
Claims priority, application France, Nov. 3, 1972, 72.38944
Int. Cl. G05f 1/46; H02m 3/22
U.S. Cl. 320—1 **1 Claim**



1. A device for charging, at a predetermined voltage, an element for storing electrical energy, comprising:

a. an electrical direct current source,

b. an induction coil comprising a primary winding whose end are connected respectively to the terminals of the said source to provide a current for charging that coil and a secondary winding whose ends are connected respectively to the terminals of the said storing element,

c. a transistor comprising two main electrodes and an auxiliary electrode for the controlling thereof, that transistor being connected by its main electrodes in series with the said primary winding in the charging circuit of the said coil;

d. a control circuit suitable for biasing the auxiliary electrode of the said transistor;

e. a rectifier connected in series between the said secondary winding and the said storing element;

f. a circuit-breaker sensitive to the charging voltage of the said storing element for stopping the charging of that storing element when that voltage reaches the said predetermined voltage, affecting the said control circuit to block the said transistor;

g. first means sensitive to the charging current of the said coil for controlling the blocking of the said circuit-breaker when the intensity of that current exceeds a first predetermined threshold, said first means comprising:

1. a resistor in series with the charging circuit of the said coil,

2. a threshold circuit suitable for comparing the voltage at the terminals with a reference voltage, the output of the said threshold circuit being connected to a first input of the said control circuit,

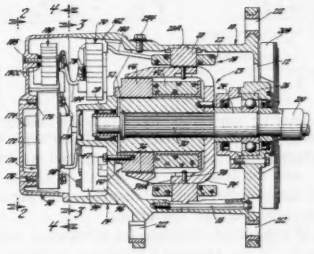
3. second means sensitive to the discharge current of the coil in the said storing element for maintaining the blocking of the said transistor, said second means comprising a third winding magnetically coupled with the primary and secondary windings of the coil, said third winding being connected to a second input of the said control circuit,

4. the said control circuit being adapted for controlling the conducting of the said transistor when the said first and second means are inoperative, characterized in that it comprises, moreover, third means sensitive to the charging voltage of the said storing element and connected to the said threshold circuit for controlling the blocking of the said transistor when the intensity of the charging current exceeds a second determined threshold lower than the said first threshold, said third means acting when the charging voltage of the storing element exceeds another predetermined voltage lower than the said predetermined voltage.

3,863,127
DUAL BATTERY CHARGING GENERATOR

Louis J. Raver, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 15, 1973, Ser. No. 406,701
Int. Cl. H02j 7/14
U.S. Cl. 320—15 **4 Claims**

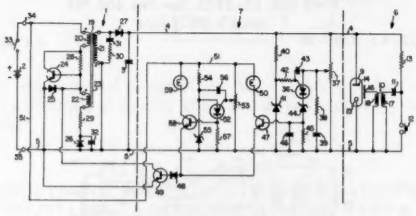


1. A diode-rectified alternating current generator unit for providing two direct voltage outputs for charging a pair of series-connected storage batteries comprising, housing means for said unit, said housing means comprising a generator housing and a second housing secured thereto, an output winding supported by and located within said generator housing, a rotor adapted to be rotatably driven for causing an alternating current to be generated in said output winding as said rotor rotates, first and second bridge rectifier units located within said housing means each having A.C. input terminals and positive and negative direct current output terminals, one of said bridge rectifier units supported by said generator housing and the other bridge rectifier unit supported by said second housing, a transformer located within said housing means supported by said second housing, means disposed within said housing means electrically connecting the primary winding of said transformer with said output winding, means located within said housing means electrically connecting the secondary winding of said transformer with said A.C. input terminals of said first bridge rectifier unit; means located within said housing means electrically connecting said output winding with said A.C. input terminals of said second bridge rectifier unit, first and second output terminals supported by said housing means, means electrically connecting one of the direct current output terminals of said first bridge rectifier unit with said first output terminal, means located within said housing means electrically connecting the positive terminal of one bridge rectifier unit and the negative terminal of the other bridge rectifier unit to said second output terminal, third output terminal means, means electrically connecting said third output terminal means to the direct current output terminal of said second bridge rectifier unit that has a polarity opposite to the polarity of said first terminal, and voltage regulating means supported by said housing means, said voltage regulating means being connected to sense the direct voltage output of said second bridge rectifier unit and operative to maintain the output voltage of said generator at a desired regulated value in response to the voltage sensed.

3,863,128
VOLTAGE MONITORING CONTROLLING AND PROTECTING APPARATUS EMPLOYING PROGRAMMABLE UNIJUNCTION TRANSISTOR

Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 30, 1973, Ser. No. 384,066
Int. Cl. H05b 41/16
U.S. Cl. 320—21 **11 Claims**



1. Monitoring apparatus for effectively terminating the operation of a d-c to d-c converter oscillator when the output voltage thereof increases to a predetermined maximum value therefor, and for restarting the operation of the oscillator when the output voltage thereof decreases to a predetermined minimum value therefor, comprising

a pair of conductors arranged for connection to the output of a d-c to d-c converter oscillator to cause an output voltage of said oscillator to appear between said conductors when said oscillator is operating,

a programmable unijunction transistor having anode, cathode, and gate electrodes,

reference voltage means connected between said gate and said cathode to establish therebetween a reference voltage of a predetermined value,

means connecting said anode and said cathode between said conductors to cause said transistor to turn on and to conduct anode-cathode current when the value of the voltage between said conductors increases to a predetermined maximum value established by the value of said reference voltage,

current responsive means connected to said transistor and to said oscillator and responsive to said anode-cathode current to effectively terminate the operation of said oscillator upon the appearance of said anode-cathode current, and

a zener diode connected in series with said cathode to turn off said transistor, to effectively restart the operation of said oscillator, when the value of said voltage between said conductors decreases to a predetermined minimum value established by the zener rating of said diode.

3,863,129
BATTERY CHARGER

Hiroyuki Yamauchi, c/o Yokoi, 6-19 Takanawa 3-chome, Tokyo, Japan

Filed Feb. 16, 1973, Ser. No. 333,012
Claims priority, application Japan, Feb. 22, 1972, 47-18251
Int. Cl. H02j 7/10
U.S. Cl. 320—31 **4 Claims**

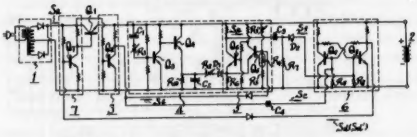
1. A battery charger comprising:

power supply means including an AC power source and rectifier means for producing voltage pulses,

switching means connected to said power supply means in series with a battery to be charged and having conductive and non-conductive states for supplying a charging current to the battery only when said switching means is in said conductive state,

control circuit means connected to said switching means for normally disposing said switching means in said conductive state during charging periods of said voltage pulses when the voltage of the latter exceeds the terminal voltage of the battery and in said non-conductive state during intervals between said charging periods,

level detecting circuit means connected to said control circuit means and including means for detecting the terminal voltage of the battery in said intervals between the charging periods of said voltage pulses and means for comparing the detected terminal voltage with a reference voltage and providing an output to said control circuit means for shifting said switching means to said non-conductive state thereof during said charging periods in



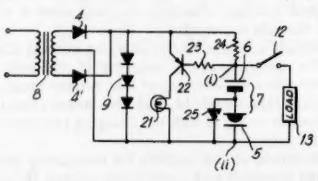
response to said detected terminal voltage rising to a level having a predetermined relation to said reference voltage, and

reference voltage control means including means for detecting the AC component of said charging current for the battery during said charging periods, and means establishing said reference voltage in correspondence with the detected AC component for varying said reference voltage from a relatively large value at the commencement of the charging of said battery to effect initial rapid charging with a high charging current, to a relatively lower value as charging of the battery proceeds to complete the charging with a relatively reduced charging current.

3,863,130
CHARGING APPARATUS AND METHOD FOR AN ALKALI STORAGE BATTERY

Goichi Yamaoka, and Kazutoshi Onikubo, both of Okaya, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Mar. 20, 1973, Ser. No. 343,119
Int. Cl. H02j 7/02
U.S. Cl. 320—44 **1 Claim**



1. A charging circuit for an electric shaver, said circuit comprising a power source circuit for transforming and rectifying a supply voltage, said power source circuit including a positive pole and a negative pole; a voltage stabilizing circuit including a plurality of diodes connected in series and each including an anode and a cathode, any one of the anodes of said diodes being connected to said positive pole and one of the cathodes of said diodes being connected to said negative pole; a resistor for detecting output voltage and a secondary battery and a coulometer being connected in series to said voltage stabilizing circuit, a diode connected in parallel to said coulometer, a transistor including a base, an emitter and a collector, a lamp coupled between said collector and said coulometer and one cathode, said emitter being coupled to said one anode, a resistor connecting said base to a junction between the first said resistor and secondary battery and a

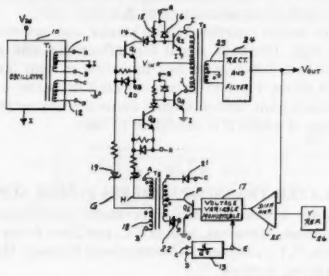
power source switch for connecting said junction to said shaver.

3,863,131

CHOPPER TRANSISTOR DRIVER AND FEEDBACK CIRCUIT FOR REGULATED DC TO DC POWER CONVERTERS USING SEPARATE INPUT AND OUTPUT GROUNDS

Malcolm D. Muir, Amherst, N.H., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sept. 6, 1973, Ser. No. 394,892
Int. Cl. H02p *13/22*
U.S. Cl. 321—2 **3 Claims**



1. A chopper transistor driver and feedback circuit apparatus for regulated D.C. to D.C. power converters using separate input and output grounds comprising in combination:

a master oscillator to provide a first and second output waveform, said first output waveform comprising a first and second square wave of oppposite polarity, said second output waveform having a third and fourth square wave of opposite polarity, said first and second square wave being referenced to input ground, said third and fourth square wave being referenced to output ground,

chopper drivers receiving said first and second output waveforms, said chopper drivers providing a first and second chopper output signal in accordance with the polarity of the said received first and second output waveforms.

a power chopper circuit receiving said first and second chopper output signal, said power chopper circuit receiving an input voltage signal, said power chopper circuit being referenced to input ground, said power chopper circuit providing a chopped output signal, said chopped output signal being referenced to output ground, said chopped signal being applied to a rectifier and filter circuit, said rectifier and filter circuit providing an output voltage signal, and

a feedback control circuit receiving a portion of said output signal, said feedback control circuit applying a control signal to said chopper drivers, said control signal establishing the duty cycle of said power chopper circuit.

3,863,132

EFFICIENT DC/DC CONVERTER FOR A SOLID STATE FUZE

George William Meeker, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 19, 1973, Ser. No. 416,912
Int. Cl. H02m *3/14*
U.S. Cl. 321—2 **1 Claim**

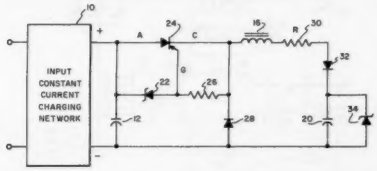
1. An electrical conversion system for converting a quantum of energy at a predetermined D.C. voltage level supplied by an aircraft electrical system to a lower D.C. voltage level with a minimum of loss to activate the fuze circuit of a bomb comprising:

a first capacitor connected between the positive and negative terminals of an input charging network;

a first zener diode having an anode and a cathode wherein said cathode of said first zener diode is connected to said positive terminal of said input charging network;

a silicon controlled rectifier having an anode, a cathode and a gate wherein said anode of said silicon controlled rectifier is connected to said positive terminal of said input charging network and said gate is connected to said anode of said first zener diode;

a first diode having a cathode and an anode wherein said anode of said first diode is connected to said negative terminal of said input charging network and said cathode is said first diode is connected to said cathode of said silicon controlled rectifier;



a resistor connected between said gate of said silicon controlled rectifier and said cathode of said first diode means;

an inductor having first and second terminals wherein said first terminal is connected to said cathode of said silicon controlled rectifier;

a second diode having an anode and a cathode wherein said anode of said second diode is connected to said second terminal of said inductor;

a second zener diode having an anode and a cathode wherein said anode of said second zener diode is connected to said negative terminal of said input charging network and said cathode of said second zener diode is connected to said cathode of said second diode;

a second capacitor connected between said anode and said cathode of said second zener diode;

wherein a lower voltage is developed across said second capacitor in comparison to voltage developed across said first capacitor during a single switching action of said silicon controlled rectifier.

3,863,133

MEANS FOR MONITORING THE RELATIVE PHASE RELATIONSHIP BETWEEN TWO VARIABLE-FREQUENCY PERIODIC SIGNALS

Ernest M. Pollard, Cherry Hill, N.J., assignor to General Electric Company, Philadelphia, Pa.

Filed July 23, 1973, Ser. No. 382,016
Int. Cl. H02m *7/20*
U.S. Cl. 321—5 **13 Claims**

1. In an electric power delivery system comprising a plurality of controllable electric valves connected between two sets of power conductors, at least one of said sets being associated with a polyphase alternating voltage network, said valves being cyclically fired in a predetermined sequence and at firing angles which can be varied to control the flow of power between said sets of conductors, improved means for continuously monitoring said firing angles comprising:

a. a source of a variable bipolar control signal;

b. means responsive to said control signal for producing during each cycle of alternating voltage a family of periodic output signals whose timing, relative to recurrent reference points in said cycle, is characterized by a variable electrical angle beta (β), said output signal producing means being so constructed and arranged that when

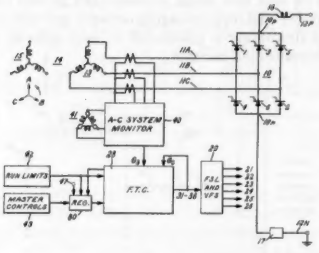
said control signal is zero and said alternating voltage has a predetermined fundamental frequency the magnitude of β is constant and when said control signal has a finite magnitude and said alternating voltage has said predetermined fundamental frequency the magnitude of β is changing at a rate that depends on the control signal magnitude and in a sense that depends on its polarity;

c. means activated by the respective output signals of said family for firing said valves in sequence;

d. means responsive to any difference between said predetermined fundamental frequency and the actual fundamental frequency of said alternating voltage for deriving a first signal which depends on the amount of such difference;

e. means for summing said control signal and said first signal; and

f. means for integrating the sum of said control signal and said first signal to produce an angle feedback signal which is the time integral of said sum, whereby the magnitude of said angle feedback signal varies with the predicted magnitude of β for each consecutive output signal that will in turn cause the next valve firing in said sequence.



3,863,134

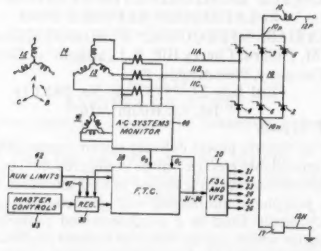
ELECTRIC CONTROL CIRCUITS FOR A STATIC POWER CONVERTER

Ernest M. Pollard, Cherry Hill, N.J., assignor to General Electric Company, Philadelphia, Pa.

Filed July 23, 1973, Ser. No. 382,015

Int. Cl. H02m 7/20

U.S. Cl. 321—5 **19 Claims**



1. In an electric power delivery system comprising a plurality of controllable electric valves connected between two sets of power conductors, at least one of said sets being assocaited with a polyphase alternating voltage network, said valves being cyclically fired in a predetermined sequence and at firing angles which can be varied to control the flow of power between said sets of conductors, improved means for determining said firing angles comprising:

a. a source of a variable bipolar control signal;

b. means responsive to said control signal for producing during each cycle of alternating voltage a family of periodic output signals whose timing, relative to recurrent reference points in said cycle, is characterized by a variable electrical angle beta (β), said output signal producing means being so constructed and arranged that when said control signal is zero and said alternating voltage has a predetermined fundamental frequency the magnitude of β is constant and when said control signal has a finite magnitude and said alternating voltage has said predetermined fundamental frequency the magnitude of β is changing at a rate that depends on the control signal magnitude and in a sense that depends on its polarity;

c. means activated by the respective output signals of said family for firing said valves in sequence;

d. means for producing an angle feedback signal whose magnitude is representative of β; and

e. clamp means coupled to said source and responsive to said angle feedback signal for influencing said control signal as a function of any deviation of said feedback signal above a preset maximum limit or below a preset minimum limit, said minimum limits thereby establishing a range in which β is permitted to vary.

3,863,135

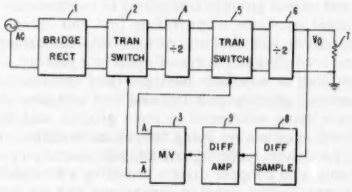
REGULATED TRANSFORMERLESS POWER SUPPLY

Leon Warner Atwood, Vienna; Peruvemba Swaminatha Balasubramanian, Manassas, both of Va., and John Brian Gillett, Kingston, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 16, 1973, Ser. No. 379,687

Int. Cl. H02m 3/32

U.S. Cl. 321—15 **3 Claims**



1. A method for converting direct current power at an input voltage level to a lower controlled output voltage level at a load, comprising the steps of:

switching said input voltage through a first switch of M controllable conductance switches to the first capacitive series voltage divider of a series of N capacitive series voltage dividers, said dividers being connected together from the divided voltage output of one of said dividers to the input of the next of said dividers in said series by similar such controllable conductance switches, and simultaneously switching said divided voltage outputs of the even numbered ones of said N dividers, where N is any whole number, to the next connected element by actuating the odd numbered ones of said M switches where M equals N+1;

storing and reducing the voltage of an electrical charge in N capacitive series voltage dividers connected in said series via controllable conductance switches by operating said odd numbered switches to charge said series connected capacitive voltage dividers with power from the element next previous in the series with the last such switches connecting the Nth divider to a load;

controlling the switching of said controllable conductance switches by a signal from a mutually exclusive switching control which operates all of said odd numbered switches simultaneously and all of said even numbered switches simultaneously, but at alternate times to insure that all of

said even numbered switches are in opposed conductive condition to said odd numbered switches at all times;

sensing the output voltage at the output of said Nth divider connected via said Mth controllable conductance switch to said load;

comparing said output voltage with a desired reference voltage and generating a control signal proportional to the difference therebetween; and

operating said mutually exclusive switching control in response to said control signal thereby providing a pulse width modulated control of said storing and reducing steps to regulate said output voltage.

3,863,136

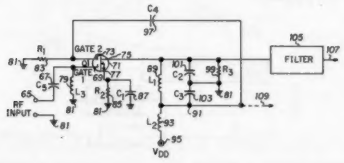
FREQUENCY CONVERTING APPARATUS

Russell W. Hanson, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, Dallas, Tex.

Filed Oct. 26, 1973, Ser. No. 410,141

Int. Cl. H02m *5/30*

U.S. Cl. 321—60 **6 Claims**



1. Frequency converter apparatus comprising, in combination:

single active element means including first and second input means and output means;

means for supplying an alternating signal of frequency f_1 to said first input means of said active element means;

filter means, connected between said output means and said second input means of said active element means, for passing only alternating signals of frequency f_2 to said second input means; and

apparatus output means connected to said filter means for providing converter frequency output signals.

3,863,137

EXCITING SYSTEM FOR ALTERNATOR

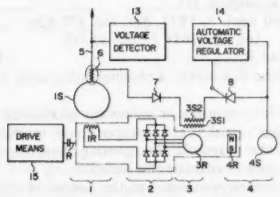
Nobuo Mishima; Takeshi Yamaguchi; Sozaburo Yoshizawa; Torao Kobayashi, and Takashi Yamade, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 17, 1973, Ser. No. 389,264

Claims priority, application Japan, Aug. 23, 1972, 47-83780

Int. Cl. H02p *9/30*

U.S. Cl. 322—25 **3 Claims**



1. An exciting system for a brushless alternator comprising an exciter having an armature coil and a field coil, rectifier means mounted on a rotary shaft for converting a.c. power produced by said exciter into d.c. power, and means for supplying said d.c. power to a field coil of said alternator for deriving an output voltage from an armature coil of said alternator, wherein said field coil of said exciter has a double winding structure including two field coil windings, a permanent magnet generator, a current converter, a rectifier connected to the output terminal of said permanent magnet generator for supplying d.c. power to one of said two field coil windings, and another rectifier connected to the output terminal of said current converter for supplying d.c. power proportional to the output voltage of said alternator to the other said field coil winding.

3,863,138

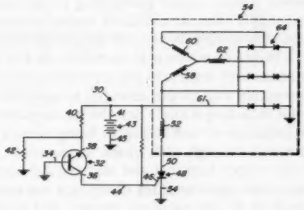
ONE ELEMENT VOLTAGE SUPPLY DEVICE

Melvin A. Lace, Prospect Heights, Ill., assignor to Motorola Inc., Chicago, Ill.

Filed Sept. 13, 1973, Ser. No. 397,023

Int. Cl. H02j *7/16*

U.S. Cl. 322—28 **3 Claims**

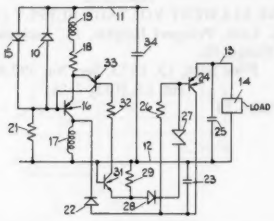


1. In a voltage regulator system for charging a storage battery in an automotive vehicle including an electrical power generating device having output winding means and field winding means coupled together electrically and a controlled semi-conductor device having input, output and control electrodes connected at one of said input and output electrodes to said field winding, said semi-conductor device being operable to conductive and non-conductive states for controlling the excitation current provided by said output winding means of said generating device to said field winding means, a one transistor voltage source coupled to the control electrode of said semi-conductor device for controlling the operation thereof between said states, said transistor including emitter, collector and base electrodes and means coupled electrically between said vehicle battery and said emitter electrode for applying across said emitter and base electrodes a voltage potential of a first polarity, the value of said first polarity voltage depending upon the voltage level of said battery and the output electrode of said transistor being coupled electrically to the control electrode of said semi-conductor device, the emitter-base junction of said transistor being placed in an avalanched state in response to the voltage level of said battery being at a predetermined level, thereby providing at the collector of said transistor a voltage of a polarity opposite from that applied at the emitter of said transistor to the control electrode of said semi-conductor device for maintaining said device in a non-conductive state and said emitter-base junction being removed from said avalanched state in response to the voltage level of said battery falling to a lower predetermined level, thereby removing said opposite polarity voltage from the control electrode of said semi-conductor device to permit the latter to be operated to a conductive state.

3,863,139
POWER SUPPLY CIRCUITS INCORPORATING VOLTAGE REGULATION

Malcolm Williams, Solihull, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Sept. 24, 1973, Ser. No. 399,797
Claims priority, application Great Britain, Sept. 23, 1972, 44130/72
Int. Cl. H02m *3/32*
U.S. Cl. 323—17 **2 Claims**

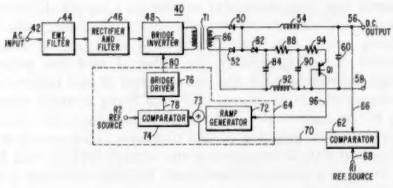


1. A power supply circuit comprising in combination first and second supply lines, an oscillator connected between said first and second supply lines, and output terminal for said oscillator, a third line which is to be maintained at a predetermined potential with respect to the second supply line, a series circuit connecting said output terminal to said third line, said series circuit including a diode and the base-emitter of a transistor, the collector of said transistor being connected to said output terminal through said diode, a capacitor connected between said output terminal and said second supply line by way of said diode, said capacitor charging when said transistor is being held on by the oscillator output, and discharging to hold said transistor on when the oscillator output is blocked by said diode, a circuit connected across said capacitor and including a voltage-sensitive device which conducts when the voltage across said capacitor reaches a predetermined level, and means operable when said device conducts for stopping the oscillator.

3,863,140
REGULATED POWER SUPPLY INCLUDING FORWARD FEED

Finis Claude Easter, Canoga Park; Ramon Hess Aires, Granada Hills, both of Calif., and Edwin Allen Goldberg, Princeton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 21, 1973, Ser. No. 417,922
Int. Cl. G05f *1/50*
U.S. Cl. 323—17 **11 Claims**

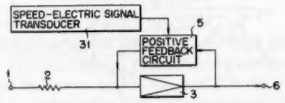


1. A power supply circuit for providing a regulated voltage at a pair of output terminals, said circuit comprising:
first means for providing an unregulated input signal;
a transformer having a primary and a secondary winding being connected in circuit with said output terminals;
regulating means connected in circuit with said first means and said primary winding;
a control loop connected between at least one of said output terminals and said regulating means, for controlling the state of current conduction of said regulating means in response to the voltage provided at said output terminals, said control loop including a pulse width modulator having a transfer function of pulse width versus control voltage, said transfer function having a particular slope; and
second means connected in circuit with said secondary winding and said control loop for providing a signal effective to alter the slope of said transfer function in a manner to compensate for variations in said input signal and thereby to maintain said regulated voltage at said pair of output terminals.

3,863,141
FREQUENCY ANALYZING APPARATUS FOR USE WITH AN EDDY CURRENT DETECTOR

Toshihiro Mori, Yokohama, and Seigo Ando, Kawasaki, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 14, 1973, Ser. No. 388,155
Claims priority, application Japan, Aug. 29, 1972, 47-86480
Int. Cl. G01r *33/12, 23/02*
U.S. Cl. 324—37 **6 Claims**



1. A low frequency analyzing apparatus for use with an eddy current defect dectector for detecting defects in a moving object, comprising:
an input terminal supplied with an output signal from the eddy current defect detector which requires its frequency to be analyzed;
an amplifier coupled to said input terminal for receiving said input signal;
a frequency selective feedback circuit coupled between the input and output terminals of the amplifier; and
a speed-electric signal transducer coupled to said feedback circuit and producing a signal denoting the travelling speed of said moving object being tested for the presence of a defect by the eddy current defect detector, said feedback circuit being responsive to said signal produced by said transducer for varying the central frequency of the feedback circuit.

3,863,142
MAGNETIC FLUXMETER

Christian P. F. Werle, Panama City, Fla., assignor to the United States of America, as represented by the Secretary of the Navy, Washington, D.C.

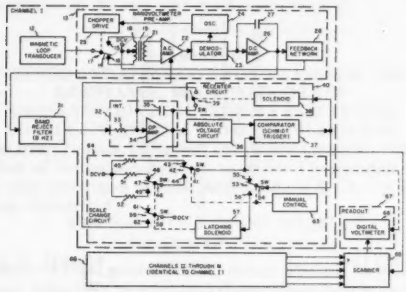
Filed Sept. 3, 1971, Ser. No. 177,836
Int. Cl. G01r *33/02, 15/08*
U.S. Cl. 324—43 R **11 Claims**

1. In a magnetic flux meter, a channel comprising in combination:
an inductive loop transducer means for producing an electrical output signal that is proportional to the rate of change of the magnetic flux passing therethrough at a predetermined environmental location;
controllable means connected to the output of said inductive loop transducer means for amplifying with high fidelity the electrical signal therefrom;
means connected to the output of said controllable amplifying means for filtering said amplified electrical signal in such manner that a predetermined spurious component thereof is deleted therefrom;
means connected to the output of said filtering means for integrating said filtered electrical signal;

means connected to said integrating means for the discharging thereof in response to a predetermined reset signal;

means effectively connected to the output of said integrating means for timely comparing the voltage of the output therefrom with a plurality of predetermined manually effected reference voltages and for producing the aforesaid predetermined reset signal whenever equal input voltages are compared thereby;

means connected to the output of said voltage comparing means for manually effecting the varying of said reference voltages in accordance with predetermined voltage ranges;



means connected to said reference voltage varying means, effectively connected to said voltage comparing means, and connected to said controllable amplifying means for selectively regulating the gain thereof; and

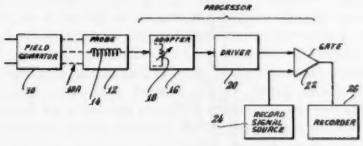
means effectively connected to the aforesaid reference voltage varying means and the output of said integrating means of the aforesaid channel for reading out the integrated electrical signal therefrom on range scales thereof that are proportional thereto and optimum for the indication thereof in response to the aforesaid manually effected reference voltages.

3,863,143

APPARATUS FOR RECORDING THE OCCURRENCE OF A PREDETERMINED OPERATION BY SENSING THE MAGNETIC FIELD OF THE OPERATION

Michael E. Bostic, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed May 25, 1972, Ser. No. 256,659
Int. Cl. G01r *33/00*
U.S. Cl. 324—43 R **5 Claims**



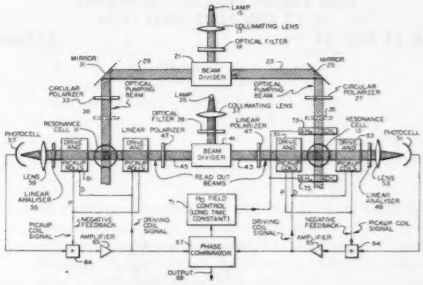
1. A recorder for recording over a time interval occurrence of a predetermined operation, the combination of: a magnetic sensor responsive to a magnetic variation representing occurrence of said predetermined operation being monitored for producing an electrical signal, said magnetic sensor including a coil adapted to inductively transduce therein variations in electromagnetic force generated by a device producing said predetermined operation being monitored, signal converting means coupled to said magnetic sensor for converting said electrical signal from said sensor to a gating signal, said signal converting means including an adapter for converting each of said electrical signals received successively thereby into a corresponding series of trigger pulses, and driver means coupled to said adapter and responsive to said trigger pulses for providing said gating signal in the form of pulses having a duration greater than the duration of said electrical signals produced by said magnetic sensor but less than the duration between successive ones of said electrical signals, and recording means coupled to said signal converting means and responsive to said gating signal for recording occurrence of said predetermined operation.

3,863,144

HIGH SENSITIVITY GRADIENT MAGNETOMETER

James H. Simpson, Katonah; Donald S. Bayley, Bedford, both of N.Y., and Ivan A. Greenwood, Stamford, Conn., assignors to The Singer Company, Little Falls, N.J.

Filed Oct. 17, 1973, Ser. No. 407,382
Int. Cl. G01n *33/08*
U.S. Cl. 324—0.5 R **17 Claims**



1. A magnetic resonance gradient magnetometer comprising:

a. first and second magnetic resonance cells rigidly mounted to a common base separated by a predetermined distance;

b. a common pumping light source to provide a beam of pumping radiation;

c. means to split the pumping beam from said common pumping source to provide a first pumping beam to said first cell and a second pumping beam to said second cell such that the light received by both said first and second cells is from the same region of said common pumping source whereby any lamp variations will be equally experienced at both cells;

d. means to circularly polarize said first and second pumping beams;

e. a common readout source of light providing a common read-out beam;

f. means to split said common read-out beam into first and second read-out beams and to provide said first and second beams respectively to said first and second resonance cells so as to intersect said cells perpendicular to said first and second pumping beams such that the light received by both said first and second cells is from the same region of said common read-out source whereby any lamp variations will be equally experienced at both cells;

g. means to cause said first and second read-out beams to interact with said cells so as to provide an amplitude modulated signal;

h. first and second means to detect and provide an output proportional to the intensity of said respective first and second read-out beams after passing through said first and second cells;

i. a first set of H_1 coils with the axis of said coil parallel to said first read-out beam;

j. a second set of H_1 coils with the axis of said coils parallel to said second read-out beam;

k. first coil driving means to drive said first set of coils, said means being responsive to the output of said first detecting means;

l. second coil driving means to drive said second set of coils, said means being responsive to the output of said second detecting means; and

m. phase comparator means having the output of said first and second detecting means as inputs and providing an output function dependent on the phase difference of said inputs whereby said output will be functionally dependent on the difference between the magnitudes of the earths magnetic field at said first and second cells.

3,863,145

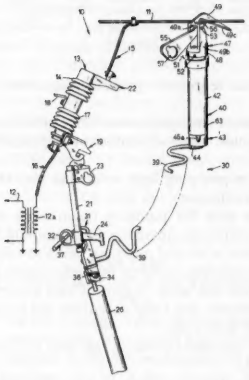
ELECTRICAL FAULT DETECTING TOOL WITH FUSE ASSEMBLY AND POWER LINE CLAMP DEVICE

Robert W. Kelly, Shorewood, and Stephen P. Hassler, Greendale, both of Wis., assignors to McGraw-Edison Company, Elgin, Ill.

Filed Aug. 29, 1973, Ser. No. 392,494

Int. Cl. G01r *31/02*; **H01r** *13/00*

U.S. Cl. 324—51 **9 Claims**



1. An electrical fault detecting tool comprising:

a current limiting fuse;

a fuse assembly having a lower fitting attached and electrically connected to one end of the fuse and an upper assembly attached and electrically connected to the other end of said fuse, said upper assembly comprising a support section, a lifting and clamping arm having a clamp extension toward one end and a lifting eye toward the other end and rotatable about an axis and positioned to place said clamp extension in a cooperative position with said support section, and a means biasing said arm about said axis to bias set clamp extension against said support section to form a power line clamp device;

an electrically conductive hook having a connection section adapted to be connected to a switch stick, and

an insulated electrical connection cable connected between the hook and the lower fitting.

3,863,146

MEASURING INSTRUMENT FOR THE ELECTRICAL DETERMINATION OF DAMAGE TO AN ENAMEL LAYER

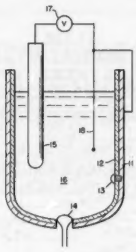
Rudolph Ehret, Schwetzingen, Germany, assignor to Pfaudler-Werke AG, Schwetzingen, Germany

Filed Nov. 28, 1973, Ser. No. 418,460

Claims priority, application Germany, Dec. 5, 1972, 2259492

Int. Cl. G01r *31/12*; **G01n** *27/20*

U.S. Cl. 324—54 **3 Claims**



1. In an electrical system for determining faults in enamel linings of steel walled vessels containing an electrolyte, comprising a glass or platinum electrode in contact with the electrolyte and connected through a voltmeter to the steel wall of the vessel, the improvement comprising a platinum auxiliary electrode in contact with the electrolyte and electrically connected to the voltmeter in parallel with the steel wall.

3,863,147

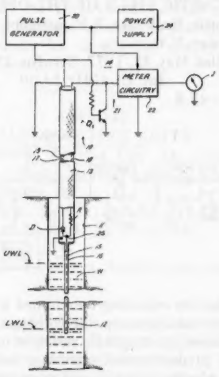
CAPACITANCE SENSING APPARATUS

Louis W. Erath, Houston, Tex., assignor to Owen F. Jensen, III and Owen F. Jensen, Jr., both of Houston, Tex., a part interest to each

Filed Feb. 16, 1973, Ser. No. 333,025

Int. Cl. G01r *11/52*, *27/26*

U.S. Cl. 324—60 CD **5 Claims**



1. Apparatus for remotely measuring the capacitance of a capacitor having first and second spaced elements with a dielectric therebetween and said second element connected to ground comprising, in combination, a first conductor electrically connected to said first element of the capacitor, a pulsating direct current voltage source means electrically connected to the first element through the first conductor for periodically

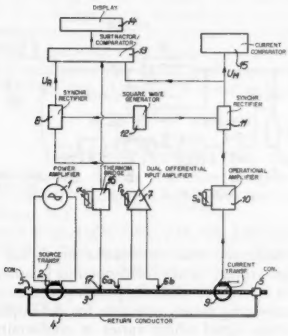
charging the first element through the first conductor, said first conductor including isolation means located adjacent the first element to prevent the charge on the first element from flowing from the first element through the first conductor to the charging means, a second conductor electrically connected to the first element to provide a path through which the charge on the element can be discharged during the periods between charges from the charging means, impedance means located in the second conductor to retard the rate of discharge of the element between charging periods from the voltage source, and enabling means responsive to the discharge of the first element through the second conductor and impedance means to register the discharge current and to indicate the capacitance of the capacitor as a function thereof.

3,863,148

METHOD AND APPARATUS FOR MEASURING THE RESISTANCE, RESISTIVITY OR THE CROSS-SECTIONAL AREA OF AN ELECTRICAL CONDUCTOR SUCH AS A WIRE, CABLE OR BAR

Paul-Henri Fellrath, Cortaillod, and Gerard Lavanchy, Prilly, both of Switzerland, assignors to Societe d'Exploitation des Cables Electriques Systeme Berthoud Borel & Cie, Cortaillod, Switzerland

Filed May 4, 1973, Ser. No. 357,187
Int. Cl. G01r *27/14*
U.S. Cl. 324—64 **21 Claims**



1. A method of making on-line measurements of physical parameters such as resistance, resistivity and cross-sectional area on a selected section of an elongated electrical conductor comprising the steps of: forming a closed loop current path with a selected section of an elongated electrical conductor; externally inducing an alternating current having a predetermined value into said closed loop independent of a grounded, short-circuited or floating condition in the remainder of the electrical conductor; said current being externally induced by a toroidal core for a limited period during which the heat produced by it in said elongate conductor cannot influence the precision of the results of the measurement, measuring the potential drop between two points spaced apart a given distance on said selected section; and deriving a selected physical parameter from the measured information.

3,863,149

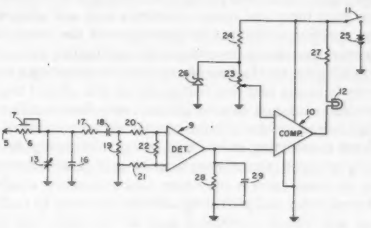
RF HAZARD DETECTOR

Leo D. Johnson, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 30, 1973, Ser. No. 410,921
Int. Cl. G01r *31/02, 19/14*
U.S. Cl. 324—72.5 **4 Claims**

1. A hand-held device for testing for radio frequency voltage levels comprising

a metallic casing adapted to be held in the hand of a tester;
a conducting probe projecting from said casing and insulated therefrom;
a high resistance having one end thereof connected to said metallic probe;
a conducting sleeve disposed about and insulated from said resistor,
said sleeve being closed off at one end with said closed off end being connected to the other end of resistance whereby said sleeve functions as a distributed capacitance across said resistor;
a variable capacitor connected between the closed off end of said sleeve and said casing,



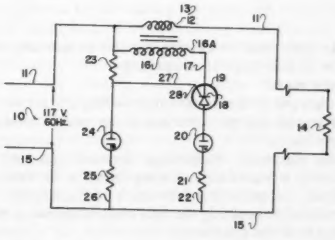
said distributed capacitance and said variable capacitor forming aa voltage divider such that whenever said casing is held in the bare hand of a tester and said probe brought in contact with an isolated conducting object that is being irradiated with radio frequency energy, said radio frequency energy flows to ground through said voltage divider and said tester;
means disposed within said casing for developing a signal indicative of the magnitude of said radio frequency flow;
means for comparing said signal with a predetermined reference voltage;
a light source supported by said casing; and
means for operating said light source whenever said signal exceeds said reference voltage by a predetermined amount.

3,863,150

ELECTRICAL CURRENT FLOW INDICATOR

Steve E. Cebuliak; Clifford Harvey Leach, and John Henry Westlake, all of Calgary, Alberta, Canada, assignors to Gentrix Engineering Ltd., Calgary, Albert, Canada

Filed June 22, 1973, Ser. No. 372,624
Int. Cl. G01n *19/14*
U.S. Cl. 324—133 **2 Claims**



1. An indicator for use with electrical power dissipating devices and a source of line voltage for indicating firstly the presence of line voltage and secondly, whether or not the electrical power dissipating device is drawing current from the line of voltage source said indicator comprising in combina-

tion, means to connect said indicator to a source of line voltage and means to connect said indicator to an electrical power dissipating device, said first means including a pair of conductors connected to said first means and to said second means, a first circuit across said conductors, said first circuit including visual line voltage indicating means and a second circuit also across said conductors between said first circuit and said second means, to visually indicate electrical power dissipation across said conductors, said second circuit including a step up transformer having primary and secondary windings, said primary winding being in series with one of said conductors, a silicon controlled rectifier including a cathode, a gate and an anode, said secondary winding being connected to the line voltage input side of said primary winding and to said cathode, a neon glow lamp and resistor in series with said silicon controlled rectifier anode and connecting with the other of said conductors and means to control the conducting characteristics of said gate, said last mentioned means including a resistor in series between said line voltage input side of said one conductor and said gate of said silicon controlled rectifier, said last mentioned resistor preventing said silicon controlled rectifier from conducting unless said power dissipating device is drawing current, the connection of said power dissipating device to draw current operating said secondary winding of said transformer and providing sufficient polarity to said cathode of said silicon controlled rectifier to cause said silicon controlled rectifier to conduct thereby operating said neon glow lamp.

3,863,151

APPARATUS FOR CAUSING A METER TO MEASURE THE RATE OF ROTATION OF A SHAFT

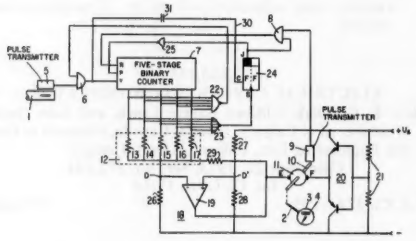
Gunther Hahlganss, Kriftel, Germany, assignor to VDO Adolf Schindling GmbH, Frankfurt, Germany

Filed Jan. 29, 1973, Ser. No. 327,403

Claims priority, application Germany, Jan. 31, 1972, 2204331

Int. Cl. G01p *3/48*

U.S. Cl. 324—167 **10 Claims**



1. An apparatus for causing a meter to measure the rate of rotation of a first shaft, comprising:

A. said meter,

B. a first pulse transmitter for providing a first train of pulses at a pulse rate proportional to the rate of rotation of the first shaft,

C. an electronic multi-stage forward-backward counter having a backward-counting input, a forward-counting input, and an output from each of the stages,

D. means for applying the first train of pulese to one of the inputs of the counter,

E. a d.c. electric motor including a second shaft driven by the motor and connected to drive said meter, and further including a power input with two power input terminals for driving the motor,

F. a second pulse transmitter for providing a second train of pulses at a pulse rate proportional to the rate of rotation of the second shaft,

G. means for applying the second train of pulses to the other of the inputs of the counter,

H. a bridge circuit having a plurality of legs forming a diagonal adapted to be balanced to zero, one of the legs of the bridge comprising a plurality of weighted impedances respectively connected to the separate stages of the multi-stage counter and arranged to have current applied through the weighted impedances to one side of said diagonal under switching control of the respective stages of the counter,

I. diagonal-output means for applving a voltage porportional to whatever voltage exists across said diagonal to one of the two power input terminals of the motor, and

J. a voltage divider connected to the other of the two input terminals of the motor.

3,863,152

CIRCUIT FOR USE IN CONNECTION WITH ELECTRIC MEASURED VALUES INDICATORS, ESPECIALLY ELECTROMECHANICAL SCALES

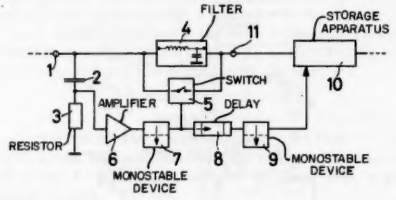
Peter Wernitz, Aachen, Germany, assignor to Dr. Hans Boekels & Co., Aachen, Germany

Filed Feb. 7, 1973, Ser. No. 330,260

Claims priority, application Germany, Feb. 8, 1972, 2205778

Int. Cl. G01r *1/38, 1/02*

U.S. Cl. 324—128 **5 Claims**



1. In combination with an electric circuit for conveying direct current voltage values corresponding to quantities to be measured to a receiver while suppressing alternating current voltages; measuring means operable for developing a direct current voltage signal which varies in conformity with the quantity measured and having an output terminal, a receiver adapted for actuation by the said direct current voltage signal and having an input terminal, a filter connecting said output terminal to said input terminal and operable only temporary to suppress alternating current interference appearing with said direct current voltage signal, a normally nonconductive switch connected in parallel with said filter, and measuring differentiation control means operable in response to a change in said direct current voltage signal in at least one direction for making said switch conductive only during substantially the entire period of time over which said change takes place.

3,863,153

SPEED MEASUREMENT AND INDICATION APPARATUS

Kamran Eshraghian, Hillcrest, Australia, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 10, 1972, Ser. No. 305,380

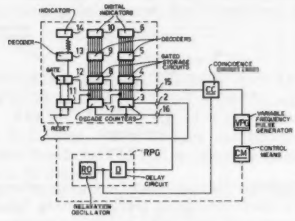
Claims priority, application Australia, Nov. 10, 1971, 6954/71

Int. Cl. G01p *3/48;* **H03k** *21/18*

U.S. Cl. 324—166 **7 Claims**

1. In a speed measurement and indication apparatus of the type wherein a counter is adapted to count the number of pulses of a signal pulse train occurring during each of a succession of measurement intervals of fixed duration, the pulse recurrence frequency of the signal pulse train being related to the speed to be measured and indicated; an indicator displays

in digital form the information present at the output of a gated storage circuit the input of which is supplied with the counter information; a sampling pulse source supplies sampling pulses to the storage circuit, and wherein the storage circuit is arranged to be so gated by the sampling pulses applied thereto that during the presence of a sampling pulse the input information of the storage circuit is transferred to the output thereof while the input information present at the time of cessation of the sampling pulse is retained at the output of the



storage circuit until the occurrence of the next succeeding sampling pulse, each applied sampling pulse being substantially coincident with termination of a measurement interval, wherein the improvement comprises frequency responsive means for providing a control signal corresponding to the magnitude of a change in the frequency of said signal pulse train, and control means for increasing the sampling rate of said sampling pulse source in response to said control signal, whereby the recurrence rate of the applied sampling pulses is determined by the rate of change of speed to be measured.

3,863,154

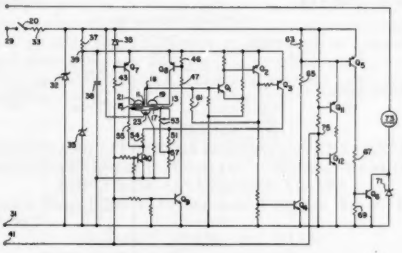
SWITCHED INTEGRATOR

Edward M. Marwell, Mount Kisco, and Eugene P. Finger, Brewster, both of N.Y., assignors to Curtis Instruments, Inc., Mount Kisco, N.Y.

Continuation-in-part of Ser. No. 275,329, July 16, 1972, Pat. No. 3,777,266. This application Jan. 22, 1973, Ser. No. 325,749

Int. Cl. G04f *9/00*

U.S. Cl. 324—182 **9 Claims**



1. A programmable integrator for measuring the use of a system comprising:

an integrator including a coulometer having a bored tube; a pair of columns of electrolytically platable metal positioned in the bore of said tube, said columns being separated by a gap filled with an electrolyte; and a pair of electrodes at each end of said tube in contact with said metal columns;

a source of light positioned to one side of said tube;

a pair of light sensitive means positioned on the side of said tube opposite said light source, said light sensitive means being spaced from one another along the longitudinal axis of said tube;

switch means for connecting said coulometer across a source of voltage, said switch being closed when said system is in operational use;

logic input means for effectively reversing the connection of said coulometer with said voltage source at the start of each of a succession of integrating intervals, said integrating interval being completed when said gap moves from a position between said light source and one of said light sensitive means to a position between said light source and the other light sensitive means, said logic input means being alternately connected to a source of high and low potential during successive integrating intervals;

means connected to said logic input means for indicating when said logic input means is connected to neither said high or low potential sources;

output means for indicating when said integrating interval is completed, said integrating interval representing a predetermined period of operational use of said system; and

means controlled by said logic input means for effectively connecting to said indicating means at the beginning of an integrating interval the light sensitive means at the opposite end of the coulometer tube from the electrolytic gap.

3,863,155

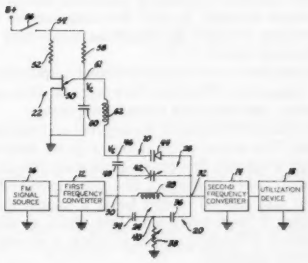
MULTIPATH RECEPTION SIMULATOR

Thomas V. Cornell, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed June 18, 1973, Ser. No. 371,281

Int. Cl. H04b *1/00*

U.S. Cl. 325—67 **5 Claims**

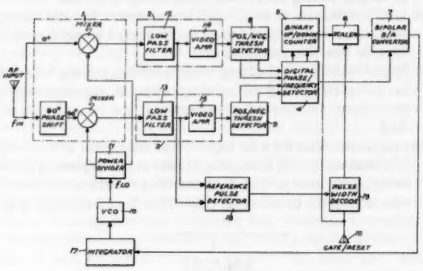


1. An apparatus for simulating the multipath reception of a modulated signal formed by impressing a modulation signal having various modulation frequencies residing within a modulation frequency band upon a carrier signal having a single carrier frequency residing within a carrier frequency band such that the modulated signal includes a frequency spectrum centered about the carrier frequency and extending within the carrier frequency band over twice the modulation frequency band, comprising: means for shifting the frequency spectrum of the modulated signal from the carrier frequency band to an intermediate frequency band located between the carrier frequency band and the modulation frequency band; means for translating the modulated signal in accordance with a generally V-shaped amplitude versus frequency response curve having a center frequency residing within the frequency spectrum of the modulated signal to amplitude and phase distort the modulated signal so as to simulate multipath reception; and means for shifting the frequency spectrum of the modulated signal from the intermediate frequency band back to the carrier frequency band.

3,863,156
FREQUENCY LOCK LOOP EMPLOYING A GATED FREQUENCY DIFFERENCE DETECTOR

Warren D. Bogert, Ft. Lee, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Mar. 21, 1973, Ser. No. 342,121
Int. Cl. H04b 1/16
U.S. Cl. 325—346 6 Claims



1. A gated frequency detector for a frequency lock loop circuit comprising:

a first source of a pulsed input signal;

a second source of a variable frequency reference signal;

first means coupled to said first and second source for generating first and second phase quadrature frequency difference outputs;

means coupled to said first and second outputs for detecting the frequency difference between said first and second sources, said detecting means comprising

a first threshold detector having first and second outputs, said first output being a logical pulse output which is high when said first phase quadrature frequency difference output is above a first predetermined threshold and said second output being a logical pulse output which is high when said first phase quadrature frequency difference output is below a second predetermined threshold;

a second threshold detector having first and second outputs, said first output being a logical pulsed output which is high when said second phase quadrature frequency difference output is above said first threshold and said second output is a logical pulse output which is high when said second phase quadrature frequency difference output is below said second threshold;

a digital phase frequency detector coupled to the output of said first and second threshold detectors for generating a first pulse signal during the duration of said input pulse which corresponds to said frequency difference and a second signal which corresponds to the sense of said frequency difference; counting means coupled to said first pulsed signal for counting the number of pulses;

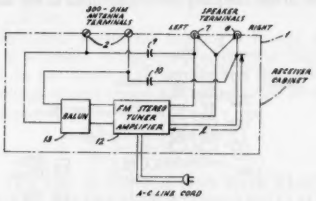
second means coupled to said means for detecting for generating a DC voltage proportional to said frequency difference, said DC voltage applied to said second source for varying the output of said second source; and

a third source of a control gate pulse having an output coupled to said second means and synchronous with said first source for enabling and resetting the operation of said second means.

3,863,157
BUILT-IN FM DIPOLE ANTENNA

Edward J. Quinlan, Riverton, and Frank E. Reda, Willingboro, both of N.J., assignors to Philco-Ford Corporation, Blue Bell, Pa.

Filed Aug. 27, 1973, Ser. No. 391,991
Int. Cl. H04q 1/24
U.S. Cl. 325—365 4 Claims

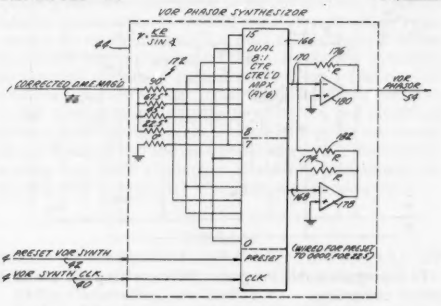


1. A stereophonic radio receiver system comprising: a cabinet housing a stereo broadcast receiver having balanced antenna input terminals and "left" and "right" speaker terminals, said receiver being capable of receiving stereo broadcast signals and producing related audio frequency output signals, a pair of loudspeakers, said loud speakers each mounted separately from said cabinet and adapted for location to provide stereo sound when provided with said signals from said receiver, means for connecting each of said pair of loudspeakers to respective ones of said speaker terminals, a first coupling capacitor located at said cabinet for connecting one of said antenna input terminals to one of said speaker terminals, a second coupling capacitor located at said cabinet for connecting the other of said antenna input terminals to the other of said speaker terminals, and means connected between said speaker terminals and said receiver for developing substantial impedance at r.f. while developing substantial no impedance at audio frequency.

3,863,158
SYNTHETIC PHASOR GENERATOR

Bertram F. Kupersmith, Bloomfield, and Clarence Casper, Jr., Windsor, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed June 4, 1973, Ser. No. 367,069
Int. Cl. H03b 19/00
U.S. Cl. 328—14 4 Claims



1. A synthetic phasor generator comprising:

clock means providing a sequence of cyclic timing signals each having a period which is a small fraction of the period of a sinusoid to be synthesized;

operational amplifier means having feedback resistance of a given magnitude;

electronic switching means having a plurality of inputs, said switching means connected to said clock means and operable in response to said timing signals to connect said operational amplifier means to successive, selected ones of said inputs, one at a time, in successive ones of the

fractions of the period of the sinusoid to be synthesized; signal receiving means for receiving a signal relating to the desired magnitude of the sinusoid to be generated; and

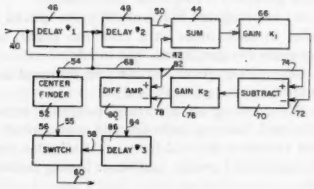
a plurality of input resistances, each connected between the related one of said switching means inputs and said signal receiving means, each having a magnitude of said feedback resistance of said operational amplifier related to the given magnitude by the sine of the angle corresponding to the fraction of the period of said sinusoid within which the related one of said switching means inputs is connected to said operational amplifier means.

3,863,159

PARTICLE ANALYZING METHOD AND APPARATUS HAVING PULSE AMPLITUDE MODIFICATION FOR PARTICLE VOLUME LINEARIZATION

Wallace H. Coulter, Miami Springs, and Edward Neal Doty, Pompano Beach, both of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed May 7, 1973, Ser. No. 357,888
Int. Cl. H03k *5/20*
U.S. Cl. 328—117 **34 Claims**



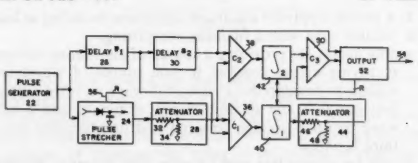
1. A method for proportionately modifying the amplitude of particle-pulses of the type having a center portion with 2 shoulder portions on either side and produced by a Coulter type of scanning aperture; whereby the modified amplitude will be the same for all particles of the same volume, regardless of their differing trajectories through the aperture, said method comprising the steps of: measuring the amplitude of a particle-pulse at its center and at two shoulder points on opposite sides of the center, deriving from the relative magnitudes of said three amplitudes an increment of amplitude error, and adding said increment of amplitude error to said center amplitude to obtain the desired modified amplitude.

3,863,160

METHOD AND APPARATUS FOR FINDING THE CENTER AMPLITUDE OF EACH PULSE OF A TRAIN OF RANDOM AMPLITUDE ASYMMETRIC PULSES

Edward Neal Doty, 1240 Stardust, Pompano Beach, Fla. 33063

Filed May 7, 1973, Ser. No. 357,930
Int. Cl. H03k *5/20*
U.S. Cl. 328—117 **27 Claims**



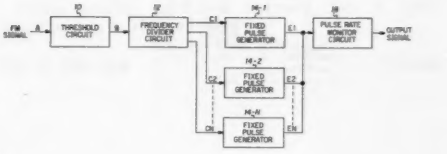
1. A method for finding the center amplitude of input pulses which are both asymmetric and of random amplitude, comprising the steps of: attenuating each input pulse a fixed percentage of its original amplitude, establishing a pair of time offset parallel channels for receiving the input pulse such that the two channels in combination can contain two derived pulses from each input pulse, comparing in each channel the original with the attenuated amplitudes of each derived pulse, deriving from such comparing two integratable signals that are related to each other in area and are time offset, one signal being in each channel, integrating separately the two signals, forming from the integration signals two wave forms which have different magnitudes, the smaller magnitude wave form being in the channel which is earlier in time and, the two wave forms, by virtue of time offset, intersecting at a center time useable for strobing the input pulse for obtaining its center amplitude.

3,863,161

DIGITAL METHOD AND APPARATUS FOR DYNAMICALLY MONITORING THE FREQUENCY OF A FREQUENCY VARYING SIGNAL

Frederick W. Johnson; Dale W. Trent, both of Richardson, Tex., and Raymond P. Escoffier, Charlottesville, Va., assignors to Rockwell International Corporation, Dallas, Tex.

Filed Nov. 28, 1973, Ser. No. 420,197
Int. Cl. H03b *3/08*
U.S. Cl. 328—140 **13 Claims**



5. Apparatus for dynamically monitoring the frequency of a frequency-varying signal comprising:

frequency divider circuit means for providing N streams of pulses in reponse to the signal, each pulse stream having a pulse for a different successive one of the cycles of the signal and containing a pulse for each $K(P+1)$ N cycle thereafter where K is a consecutively increasing number starting with the integer 1 and P equals the number of cycles between successive pulse stream producing cycles; and

pulse generating circuit means for providing N groups of pulses, each group being generated in response to a different one of said pulse streams and containing a fixed area pulse for each pulse in its correpsonding stream and serially combining said groups of pulses into a single pulse stream in the same order in which they were generated.

13. A method of dynamically monitoring the frequency of a frequency-varying electrical signal comprising:

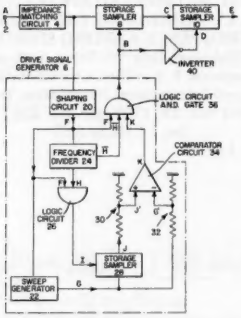
generating N pulse streams from the electrical signal, each stream beginning with a pulse for a different consecutive half-cycle of the signal and containing a pulse for each Kn half-cycle thereafter where K is a consecutively increasing number starting with the integer one; and

generating and serially combining into a single pulse stream in the same order in which they are generated fixed area pulses distributed in N groups wherein each group is associated with a different one of said N streams and contains a fixed area pulse for each pulse in its associated streams.

3,863,162
HIGH-SPEED DEMODULATOR FOR SINE-WAVE SIGNALS

Bernard Audenard, Seclin; Michel Pigeon, Bures Sur Yvette, and Claude Stach, Faches-Thumesnil, all of France, assignors to Commissariat a L'Energie Atomique, Paris, France

Filed Sept. 7, 1973, Ser. No. 394,981
Claims priority, application France, Sept. 21, 1972, 72.33493
Int. Cl. H03k 5/01
U.S. Cl. 328—151 6 Claims

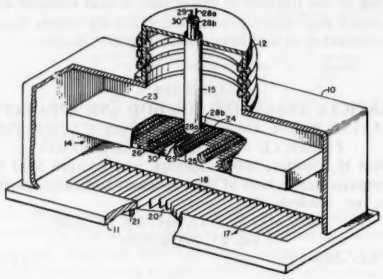


1. A sine-wave signal demodulator comprising:
a first circuit for generating a first drive signal in the form of square-topped pulses each coinciding with the first half of a positive half-wave of said sine-wave signal in each alternate cycle, comprising,
a shaping circuit which receives the sine-wave signal and delivers a signal F formed of rectangular pulses having the same frequency as the sine-wave signal,
a sweep waveform generator which is activated by the signal F and emits a signal G,
a scale-of-two circuit for dividing the frequency of the signal F by two and delivering a signal H as well as its complement H,
a first logic circuit which performs the operation F.H,
a storage sampler which receives the signal resulting from the operation F.H, is activated by the signal G and emits a signal J,
a first potentiometer of ratio k which converts G to $G' = kG$, a second potentiometer of ratio $k/2$ which converts J to $J' = k/2\ J$,
a two-input comparator circuit which receives the signal G' at its negative input and the signal J' at its positive input and which delivers a signal K,
a second logic circuit which performs the operation F.H.K, thus generating said first drive signal,
a first storage sampler which receives said sine-wave signal and is activated by said first drive signal,
a second circuit receiving said first drive signal and generating a second drive signal outside the square-topped pulses of said first drive signal,
a second storage sampler connected to the output of the first sampler and activated by said second drive signal.

3,863,163
BROAD BEAM ELECTRON GUN

Sherman R. Farrell, 29 Camino Del Monte, Orinda, Calif. 94563; Laszlo John Demeter, 1563 Trestle Glen Rd., Oakland, Calif. 94610, and Peter Ghormley Woods, 1247 Sherman St., Alameda, Calif. 94501

Filed Apr. 20, 1973, Ser. No. 353,070
Int. Cl. H01j 29/48, 33/00
U.S. Cl. 328—233 5 Claims

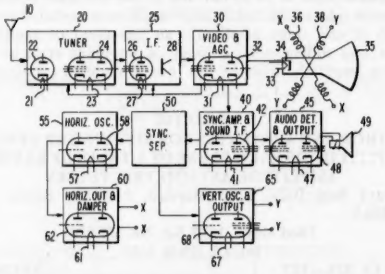


1. A broad beam electron gun comprising
an anode generally transparent to electrons,
a plurality of elongated filament cathodes spaced apart and parallel to each other in a common plane, said plane being generally parallel to said anode,
a generally cylindroform control grid disposed about each of said filament cathodes, and
means for creating an electrical potential between said anode, said filament cathodes and said control grids
whereby electrons emitted from said cathodes are accelerated toward said anode, said beam having both width and depth.

3,863,164
TUBE FILAMENT POWER SUPPLY

William Louis Seibert, and Paul Carleton Wilmarth, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,822
Int. Cl. H01j 19/16
U.S. Cl. 328—270 9 Claims



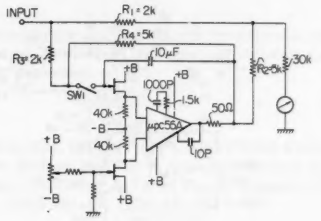
1. A power supply for electronic apparatus including at least one vacuum tube with a filament comprising:
supply means for providing a source of alternating voltage;
rectifying means coupled to said source of alternating voltage to develop therefrom a full-wave rectified voltage between first and second output terminals, and a half-wave rectified voltage between said first terminal and a third terminal;
means for connecting said vacuum tube filament between said first and third terminals; and
switch means operable between normal and standby modes of operation coupled between said second and third ter-

minals of said rectifying means for converting the voltage developed between said first and third terminals to full-wave rectified voltage during a normal mode of operation.

3,863,165
METHOD AND APPARATUS FOR ADJUSTING ZERO POINT AUTOMATICALLY

Mitsuru Egawa, and Tomoteru Takano, both of Tokyo, Japan, assignors to Tokyo Seimitsu Co., Ltd., Tokyo, Japan

Filed Sept. 1, 1971, Ser. No. 176,883
Claims priority, application Japan, Sept. 3, 1970, 45-76786
Int. Cl. G01r *19/00*
U.S. Cl. 330—2 **2 Claims**



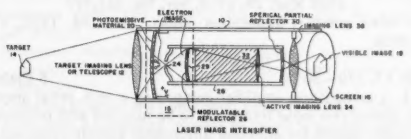
1. Apparatus for adjusting the zero point automatically in the measuring apparatus which includes a means for converting a quantity of a mechanical displacement into an electrical quantity, comprising an input terminal connected to an output terminal via a resistor R_1, said input terminal being connected via a resistor R_3 to one terminal of a switching means, the other terminal of said switching means being connected to a DC amplifier having a high input impedance and a high gain, the output of said amplifier being connected via a resistor r_4 to said one terminal of said switching circuit and via a capacitor C to the input of said DC amplifier and via a resistor R_2 to said output terminal, remaining terminals of said input terminal and output terminal are connected to ground, and said resistor R_1, R_2, R_3 and R_4 being selected so as to satisfy the relation

$R_2R_3 = R_1R_4$.

3,863,166
LASER IMAGE INTENSIFIER

Morton Stimler, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 889,445, Dec. 31, 1969, abandoned. This application Feb. 5, 1973, Ser. No. 329,784
Int. Cl. H01s *3/05;* **H01j** *31/50*
U.S. Cl. 330—4.3 **8 Claims**



1. A low light level target laser image intensifier comprising:

a conjugate resonator having a pair of spherical end reflectors, one of said end reflectors having modulatable reflectivity and being comprised of semiconductor material having the characteristics of changing its index of refraction in regions of minority carrier injection and increasing its reflectance in proportion to the density of electrons impinging upon it, said semiconductive material thickness is given by the relation

$d = p\lambda/2n$

wherein p is an integer, λ is the predetermined wavelength of incident radiation from said lasing means normal to said semiconductive material and n is the index of refraction, having a thickness such that its reflectance varies from a maxima to minima for a given incident wavelength and is approximately equal to the electron penetration depth, said other end reflector being partially reflective to provide an output;

active lasing means positioned with said conjugate reasonator between said end reflectors; and

an electron image intensifier for modulating said modulatable reflector, said intensifier comprising:

photoemissive means for emitting electrons from one surface in response to the impingement of an optical image on the opposite surface thereof;

means for accelerating said emitted electrons; and

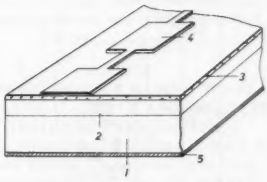
means for focusing said accelerated electrons onto said modulatable reflector;

whereby a low light level optical target image causing said impingement on said photoemissive surface is amplified by point to point lasing action between said end reflectors to produce an intensified image at said conjugate resonator output.

3,863,167
PARAMETRIC MOVING FIELD AMPLIFIER

Dr. Wolfgang Harth, and Jorg Muller, both of Braunschweig, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt/Main, Germany

Filed July 6, 1973, Ser. No. 377,020
Claims priority, application Germany, July 8, 1972, 2233726; July 8, 1972, 7225580
Int. Cl. H03f *7/04*
U.S. Cl. 330—4.6 **8 Claims**



1. A parametric moving field amplifier comprising in combination:

a semiconductor body;

a layer of insulating material on one surface of said semiconductor body;

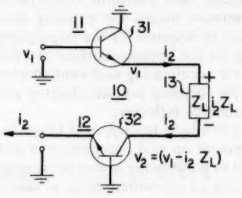
a striplike metal conductor on the surface of said insulating layer and extending along the length thereof, said conductor having a width which is less than the width of said insulating layer and of said semiconductor body, said width of said conductor varying along the length of said conductor and having a periodic structure with different strip widths, said periodic structure being dimensioned to form a low pass filter with the limiting frequency of the filter being immediately above the pumping frequency of the amplifier; and

an electrical contact applied to the surface of said semiconductor body opposite to said one surface.

3,863,168
AMPLIFIERS WITH PARALLEL-CONNECTED AMPLIFYING STAGES

Henry Richard Beurrier, Chester Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 12, 1973, Ser. No. 331,535
Int. Cl. H03f 3/42
U.S. Cl. 330—18 13 Claims

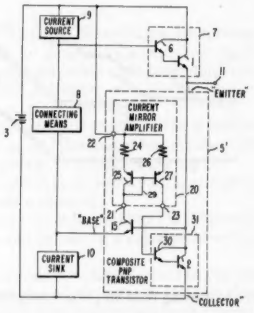


1. In combination;
a constant voltage signal source;
a constant current signal source;
and an output load;
characterized in that:
said sources are phase coherent;
and in that said sources and said load are connected in series.

3,863,169
COMPOSITE TRANSISTOR CIRCUIT

Mark Berwyn Knight, N. Caldwell, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 18, 1974, Ser. No. 434,375
Int. Cl. H03f 3/04
U.S. Cl. 330—22 9 Claims

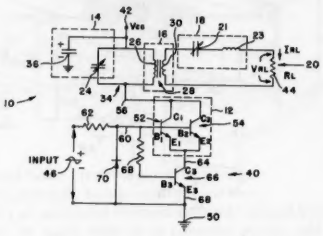


1. A circuit exhibiting at a first, a second and a third terminals characteristics corresponding to those which would be exhibited by an equivalent transistor of a particular conductivity type at its base, emitter, and collector electrodes, respectively, said circuit comprising:
a first and a second transistors, each of opposite conductivity type to said particular conductivity type, each of said first and said second transistors having a base and an emitter and a collector electrode;
means connecting said first transistor emitter electrode to said first terminal;
means connecting said first transistor base electrode and said second transistor collector electrode each to said second terminal;
means connecting said second transistor emitter electrode to said third terminal; and
a current mirror amplifier having an input circuit to which said first transistor collector electrode is connected and an output circuit connected to said second transistor base electrode.

3,863,170
THERMALLY STABLE POWER AMPLIFIER

Henry Kevin Ratcliff, Wirral, England, assignor to The Bendix Corporation, South Bend, Ind.

Filed Feb. 21, 1973, Ser. No. 334,517
Int. Cl. H03f 1/32
U.S. Cl. 330—23 8 Claims



1. A transistor power amplifier comprising:
switching means connected between a voltage source and a ground for controlling an operational signal derived from an input signal supplied by a source of electrical current;
shaping means located between said switching means and said voltage source for sequentially presenting said input signal and said voltage to said switching means;
resonant means connected to said switching means for transmitting said operational signal at a predetermined frequency to a load;
matching means connected to said resonant means and said voltage source for isolating the input signal from the operational signal to develop a sinusoidal output signal upon passing the operational signal through said load; and
control means connected to said switching means and said ground for preventing the creation of thermal energy in the switching means by substantially eliminating the instantaneous and simultaneous presence of the input signal and voltage source therein to thereby stabilize the frequency of said operational signal over an extended period of time.

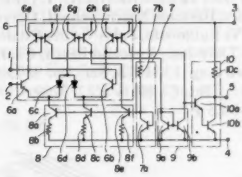
3,863,171
COMPARISON AMPLIFIER

Yoshichi Kawashima, Gifu, Japan, assignor to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed Mar. 28, 1973, Ser. No. 345,497
Claims priority, application Japan, Mar. 30, 1972, 47-032020
Int. Cl. H03f 3/10
U.S. Cl. 330—30 D 5 Claims

1. A comparison amplifier comprising a differential amplifier having two input transistors to be supplied with two types of input signals for effecting differential amplification and a constant current source for driving said differential amplifier so as to amplify a difference voltage between said two types of input signals, said constant current source including two constant current source transistors connected to said two input transistors, respectively, and said differential amplifier including two diodes being connected together at one end of each forming a common end connected to a transistor for passing a constant current, the other ends of said two diodes being connected to said two constant current source transis-

tors, respectively, to increase the allowable range for the difference voltage between input signals applied to said input transistors, and said differential amplifier further including



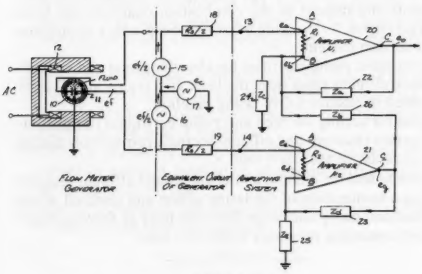
two load transistors connected directly to collectors of said input transistors, respectively, for supplying collector current to said input transistors.

3,863,172

COMMON-MODE REJECTION AMPLIFYING SYSTEM

Makoto Sato, Hatboro, and Roy F. Schmoock, Ivyland, both of Pa., assignors to Fischer & Porter Co., Warminster, Pa.

Filed Jan. 19, 1970, Ser. No. 3,907
Int. Cl. H03f *1/00*
U.S. Cl. 330—69 **3 Claims**



1. An amplifying system responsive to a compound signal having a signal component and a common-mode noise component, said compound signal being derived from the electrodes of an electromagnetic flowmeter having an A-C energized electromagnet to establish an electromagnetic field across a flow tube whereby said compound signal is induced in said electrodes as a function of flow rate, said system comprising:

a. first and second differential amplifier circuits each having first and second inputs and a single output, said first and second amplifier circuits each including a negative feedback impedance connected between the output and the second input thereof,

b. means including a coupling impedance to connect the output of the second circuit to the second input of the first circuit,

c. means to apply the compound signal to the first inputs of the first and second circuits to cause the signal component to appear at the input of the first circuit in summing relationship and the noise component to appear in subtractive relationship, said first and second circuits having impedance parameters to effect amplification of the signal component and to effect rejection of the noise component in the first circuit, and

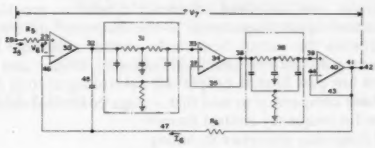
d. means coupled to the single output of said first circuit and independent of the single output of said second circuit to derive therefrom the amplified signal component substantially free of said noise component.

3,863,173

AMPLIFIER CIRCUIT FOR MINIMIZING VOLTAGE OFFSET

Paul E. Scheib, and Robert H. Shumate, both of Waynesboro, Va., assignors to General Electric Company, Waynesboro, Va.

Filed June 3, 1974, Ser. No. 475,423
Int. Cl. H03f *1/36*
U.S. Cl. 330—98 **7 Claims**



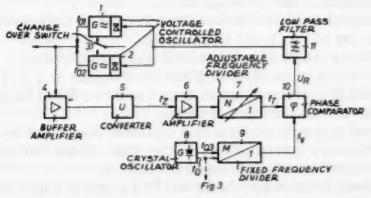
1. In a filter circuit including in combination, a plurality of cascaded amplifier stages coupled to one another through filter elements and exhibiting a unity voltage gain over each stage, the first of said amplifier stages having first and second input terminals and an output terminal, the last of said amplifiers having an output terminal, a filter circuit input, and an input impedance connected in series between said first terminal and said filter circuit input, the improvement comprising: a first negative feedback circuit comprising a first feedback impedance connected between said output terminal of said last amplifier and said second input terminal, a second negative feedback circuit comprising a second feedback impedance connected between said second input terminal of said first amplifier and said output terminal of said first amplifier, said second feedback impedance being dimensioned such that at and above the cut-off frequency of the filter circuit its impedance value is substantially lower than that of said first feedback impedance, whereas for direct current its impedance value is substantially higher than that of said first feedback impedance and said first feedback impedance being dimensioned such that for direct current its impedance value is substantially equal to that of said input impedance.

3,863,174

FREQUENCY SYNTHESIZER HAVING PHASE-LOCKED LOOP INCLUDING SAMPLE AND HOLD CIRCUIT FREQUENCY CONVERTER

Roman Klinger, Neuenburg, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 24, 1974, Ser. No. 463,475
Claims priority, application Germany, May 21, 1973, 2325741
Int. Cl. H03b *3/04*
U.S. Cl. 331—2 **3 Claims**



1. A circuit arrangement for generating a plurality of spaced channel frequencies lying within at least one frequency range comprising:

a first voltage controlled oscillator;

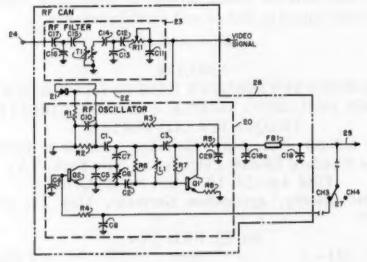
a frequency converter coupled to the output of said first voltage controlled oscillator;
an adjustable frequency divider coupled to the output of said frequency converter; said adjustable frequency divider being also a channel selector;
a crystal oscillator;
a fixed frequency divider coupled to the output of said crystal oscillator, the output frequency of said fixed frequency divider being a reference frequency having a value equal to the channel spacing;
a phase comparator coupled to said adjustable frequency divider and said fixed frequency divider to provide a control signal proportional to the frequency difference between the output frequencies of said adjustable frequency divider and said fixed frequency divider; and
a first low pass filter to couple said control signal from said phase comparator to said first voltage controlled oscillator for frequency control thereof;
said frequency converter including
a sample and hold circuit coupled to the output of said first voltage controlled oscillator,
a pulse generator coupled to said crystal oscillator to produce a sampling pulse for application to said sample and hold circuit to sample the output frequency of said first voltage controlled oscillator, and
a low pass filter coupled to the output of said sample and hold circuit to couple the converted frequency to said adjustable frequency divider,
said sampling pulse having a pulse width which is very small as compared to the period of the output frequency of said first voltage controlled oscillator.

3,863,175

OSCILLATOR DEVICE HAVING REMOTE RADIATION-REE SWITCH MEANS

George A. Kent, West Los Angeles, Calif., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Mar. 29, 1973, Ser. No. 346,212
Int. Cl. H03b *19/00*
U.S. Cl. 331—67 **6 Claims**



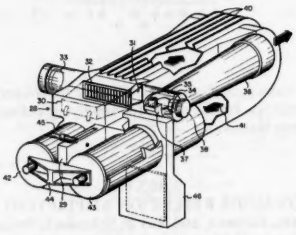
1. Frequency selection apparatus comprising
closely coupled double tuned transformer means responsive to one of two tuned frequencies,
oscillator means coupled to said transformer means,
first means to oscillate said oscillator means at a first frequency corresponding to one of said two tuned frequencies of said transformer means,
second means to oscillate said oscillator means at a second frequency corresponding to the other of said two tuned frequencies of said transformer means,
first switch means to actuate said first means in a first switch position and to actuate said second means in a second switch position,
second switch means to actuate said first switch means,
filter means being between said first and second switch means to filter out the oscillatory signals of said oscillator means whereby the coupling between said filter means and said second switch means will not have said oscillatory signals channeled therein.

3,863,176

PORTABLE CHEMICAL LASER

John S. Martinez, Hermosa Beach; John R. Ogren, Hawthorne, and Eugene V. Rutkowski, Palos Verdes Estates, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Aug. 13, 1973, Ser. No. 387,866
Int. Cl. H01s *3/22, 3/09*
U.S. Cl. 331—94.5 P **11 Claims**



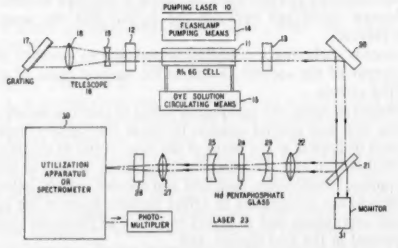
1. A chemical laser comprising:
a combustion chamber;
a laser gain region;
an effluent section;
a removable feed cartridge for separately supplying reactants and diluent to the combustion chamber and laser gain region for creating a laser medium with a population inversion therein;
a removable pump cartridge for absorbing heat and neutralizing effluent gases from the laser gain region at sufficient speed to sustain a CW lasing reaction;
means for sealing the feed and pump cartridges to the combustion chamber and effluent sections respectively during operation of the laser; and
means to seal the combustion chamber and effluent sections upon termination of the lasing action and removal of the feed and pump cartridges from the laser to thereby maintain operating pressures within the laser.

3,863,177

METALLIC PENTAPHOSPHATE GLASSES AND USES THEREFOR

Theodore Charlouis Damen, Colts Neck; Bruce Cedric Tofield, Bradley Beach, and Heinz Paul Weber, Middletown, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 9, 1973, Ser. No. 358,657
Int. Cl. H01s *3/16*
U.S. Cl. 331—94.5 F **11 Claims**



1. A transversely-pumped laser comprising an elongated active element including at least neodymium pentaphosphate, means for resonating 1.05 micrometer radiation from said

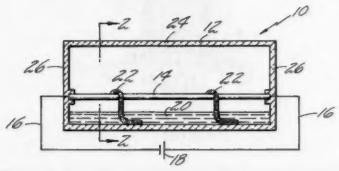
element along an axis, and means for pumping said element transversely to said axis at wavelengths overlapping at least one absorption band of said element.

3,863,178

APPARATUS FOR THE PRODUCTION OF LASER RADIATION FROM A METAL VAPOR

Carl M. Ferrar, Rockville, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed June 21, 1973, Ser. No. 372,116
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 G **6 Claims**



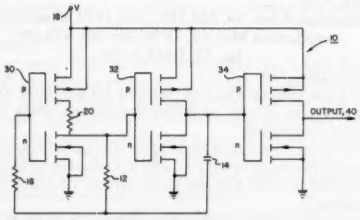
1. Apparatus for the production of laser radiation from a metal vapor working medium comprising:
- a closed vessel for the containment of a vaporous working medium including a reservoir region in which the medium can accumulate in the liquid phase;
- a heater element internal of the vessel to provide a hot surface at a temperature sufficient to boil liquid phase working medium which is brought into contact with the surface;
- a power source for supplying energy to the heating element;
- liquid metal transfer means for moving the working medium in the liquid phase from the reservoir region to the surface of the heater element;
- means for producing an electric discharge internal of the vessel to cause a population inversion in the vaporous working medium; and
- means for sustaining stimulated emission of laser radiation in the excited working medium.

3,863,179

ULTRA LOW POWER AND ULTRA STABLE ASTABLE MULTIVIBRATOR

Gee In Goo, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 28, 1973, Ser. No. 419,752
Int. Cl. H03k *3/282*
U.S. Cl. 331—108 D **2 Claims**



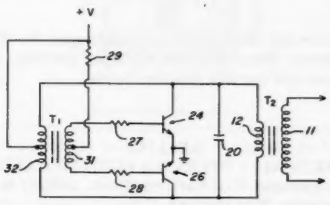
1. A COS/MOS oscillator comprising:
- a plurality of gates of complementary symmetry metal oxide silicon devices coupled to one another and arranged in an oscillator configuration;
- a resistor-capacitor combination coupled to said gates for controlling the frequency of oscillation of said oscillator; and
- a large resistor on the order of 1 megohm in the first gate of said COS/MOS devices between the p channel transistor and n channel transistor for substantially reducing current drain when both transistors of said first gate are on.

3,863,180

HIGH VOLTAGE GENERATOR

Ronald F. Parson, St. Paul, Minn., assignor to Graco Inc., Minneapolis, Minn.

Filed Dec. 11, 1973, Ser. No. 423,874
Int. Cl. H03b *5/00*
U.S. Cl. 331—117 R **9 Claims**



1. Apparatus for generating an alternating current high voltage to a load from a direct current low voltage supply having two voltage terminals, comprising a transformer having its secondary winding connected across said load and having a primary winding; two series opposing semiconductor switches connected across said primary winding, with the common junction point of said semiconductor switches connected to a first terminal of said low voltage supply, each of said semiconductor switches having a control element for regulating the respective current conduction through said switches; a current drive transformer winding connected between respective control elements of said conductive switches and having a center tap connection connected to the second terminal of said low voltage supply; means for coupling voltage from said second terminal of said low voltage supply to said primary winding and to said series opposing semiconductor switches; means for electrically coupling said current drive transformer winding to said transformer primary winding, whereby the alternating current drive energy for said semiconductor switch control element is derived from said primary winding; and a capacitor connected in parallel connection across said transformer.

3,863,181

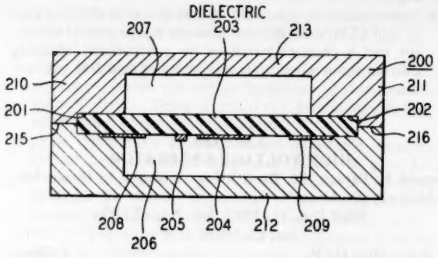
MODE SUPPRESSOR FOR STRIP TRANSMISSION LINES

Bernard Glance, Colts Neck, and Martin Victor Schneider, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 3, 1973, Ser. No. 421,392
Int. Cl. H01p *1/16*
U.S. Cl. 333—96 **7 Claims**

1. A transmission device comprising:
- a ground plane member;
- a dielectric substrate;
- a conductor pattern supported by the dielectric;
- a shield having two parallel side members, a top member and the ground plane member parallel to the top member, the shield being positioned to enclose the dielectric and the conductor pattern within a channel space;
- means for suppressing modes associated with vertical currents, said means including a groove in at least one side member of the shield, said groove being dimensioned and

positioned to appear as an open circuit to the vertical currents;



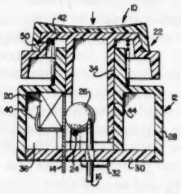
a resistive thin film being positioned between the dielectric substrate and shield and extending partially into the groove and partially into the channel.

3,863,182

MAGNETICALLY OPERATED ELECTRICAL SWITCH

Lloyd J. Lapointe, West Hartford, Conn., assignor to Magsat Corporation, West Hartford, Conn.

Filed Mar. 22, 1974, Ser. No. 453,722
Int. Cl. H01h *13/00*
U.S. Cl. 335—207 **12 Claims**



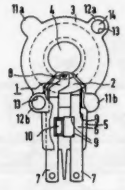
1. An electrical switch comprising a plurality of electrical contacts spaced from each other, a permanent magnet mounted in fixed position relative to said electrical contacts, a magnetic switching part disposed within the magnetic influence of said magnet and maintained in one switching position by the magnetic attraction of said magnet, said switching part in said one position being out of electrical contact with at least one of said electrical contacts and being movable to another position wherein it is in electrical contact with each of said electrical contacts, an operating part supported for movement relative to said electrical contacts and said magnet between first and second positions, a ferromagnetic element carried by said operating part and disposed within the magnetic influence of said magnet and in close proximity to said switching part when said operating part is in its first position and said switching part is in said one position, said ferromagnetic element exerting a greater magnetic attraction for said switching part than said magnet when said operating part is in its first position and during at least a portion of the travel of said operating part from its first toward its second position, said switching part being movable from its one to its other position with said operating part when the latter part is moved from its first toward its second position.

3,863,183

IMPULSE TRANSFORMER

Hans Werner Kranz, Regensburg, and Max Schultes, Piehlmule, both of Germany, assignors to Siemens Aktiengesellschaft, Munchen, Germany

Continuation of Ser. No. 310,852, Nov. 30, 1972, abandoned. This application Apr. 25, 1974, Ser. No. 464,237
Claims priority, application Germany, Dec. 1, 1971, 2159491
Int. Cl. H01f *27/28*
U.S. Cl. 336—96 **4 Claims**



1. An impulse transformer for motor vehicle ignition systems equipped with at least one ignition cable, comprising:

an annular core for receiving the ignition cable;

a housing fabricated of synthetic material encapsulating said core;

a single stamped flat member, comprising a winding and including a single turn on said core, said member having respective end portions and a mid-portion integral with said end portions and a step-like profile corresponding to two letters L's having respective base segments facing each other, said letter L's being placed one above the other, the ends of the base segments being connected by a bridge extending in the direction of the long segments of the L's, the bridge having a length corresponding to the height of said annular core, each of said end portions being apportioned into an intermediate portion and a tip portion with said tip portion being in the form of a flat plug contact suitable for insertion into a plug-in socket, said intermediate and said tip portions being mutually adjacent and disposed flat in a common plane at a predetermined spacing from each other, said intermediate portions being disposed within said housing of synthetic material and having edges formed thereon which extend in a direction transverse to the longitudinal direction of said tip portions, and said housing having mounting portions for receiving said edges.

3,863,184

TELEVISION SCANNING LINEARITY DEVICE

Leslie Neil Thibodeau, and Lawrence Edward Smith, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 323,189, Jan., 1973, abandoned. This application May 16, 1974, Ser. No. 470,699
Int. Cl. H01f *21/00*
U.S. Cl. 336—110 **5 Claims**

1. An electromagnetic coil assembly for providing different inductances to current of different polarity passing through said coil, comprising:

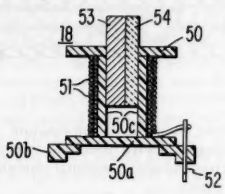
a coil form member of nonmagnetic material comprising a shell, the outer surface of which is adapted to have a coil wound thereon and the inner surface of which forms a recess;

a coil wound about said outer surface of said shell;

a generally rectangular magnetically saturable ferrite core member disposed within said recess; and

a generally rectangular ferrite permanent magnet mounted adjacent to said core member within said recess, said magnet being magnetized only on its surface disposed

adjacent to said core with a single different pole at each end of the length of said magnet for magnetically biasing said core such that the flux generated in said core by said magnet opposes the flux generated in said core by current of a first polarity passing through said coil and said flux



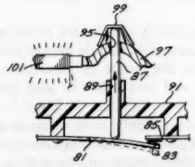
generated by said magnet aids the flux generated in said core by current of a second polarity passing through said coil for saturating said core, thereby providing different inductances in said coil for the same amount of current of said first and second polarities.

3,863,185

THERMAL BEAM ACTUATED ELECTRICAL SEQUENCER

Bradford N. Hull, Long Beach, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 17, 1973, Ser. No. 424,954
Int. Cl. H01h *61/00*
U.S. Cl. 337—44 **10 Claims**



1. An electrical sequencer for actuating a plurality of electrical components in a predetermined sequence and comprising:

a housing;

an elongated thermal beam supported from said housing and operative in response to heating of one end thereof to a predetermined temperature to provide respective selected temperatures in said predetermined sequence at a plurality of predetermined points along its length;

a plurality of thermal operators disposed adjacent said respective points and responsive to said respective temperatures to be rendered operative;

heating means for heating said one end of said beam to said predetermined temperature; and

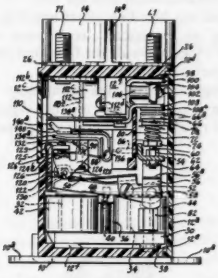
electrical current means connected with said operators whereby energization of said heating means causes said thermal beam to be progressively heated from said one end to cause said operators to be rendered operative in said predetermined sequence.

3,863,186

THREE PHASE REMOTE CONTROL CIRCUIT BREAKER

Edward A. Mallonen, New Berlin, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 26, 1973, Ser. No. 409,785
Int. Cl. H01h *71/22*
U.S. Cl. 337—99 **2 Claims**



1. In an electro-thermal latch trip mechanism the combination with a pivotally mounted latch having means biasing it towards a latching position

a. of a plurality of bimetal members connectable in the respective branches of an electrical load circuit

b. a member having portions in line with respective ones of said bimetal members, and

c. ambient temperature compensator bimetal members spaced apart and corresponding in number to the first mentioned bimetal members and attached at corresponding ends to said latch and attached to and supporting said member at their other ends

d. said first mentioned bimetal members warping toward and engaging with said member in accordance with the overload current flowing therethrough to pivot said latch out of its latching position, and

e. said compensator bimetal members individually and differentially tending to warp and pivot said member away from said bimetal members and toward said latach in accordance to the ambient temperature to which they are subjected.

3,863,187

TOTAL RANGE FAULT INTERRUPTER

William R. Mahieu; Robert S. Tackaberry, and Philip G. Chance, all of Centralia, Mo., assignors to A. B. Chance Company, Centralia, Mo.

Filed June 4, 1973, Ser. No. 366,343
Int. Cl. H01h *85/04*
U.S. Cl. 337—162 **23 Claims**

1. Electrical fault interrupter apparatus for suppressing external arcing under fault conditions, as well as providing a double-fused, dual fault-current-range protected, high current handling, electrical coupling between a high voltage power line energized with an electrical potential of a first predetermined level and electrical power-accepting means to be energized from said line, said apparatus comprising:

a cut-out fuse device including

an elongate electrical insulator adapted to have a zone thereof intermediate its ends conventionally supported upon utility pole structure or the like,

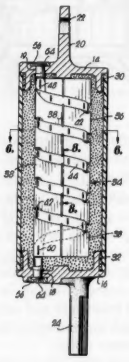
a pair of electrically conductive assemblies mounted upon said insulator respectively adjacent the opposite ends of the latter and both extending laterally from said insulator in the same general direction and in spaced relationship to each other,

said assemblies at their respective zones of closest proximity to each other and to said zone of said insulator being physically separated by respective distances, which are

sufficient to normally preclude arcing therebetween of an electrical potential of said first predetermined level or of level within a first range of levels next above said first predetermined level, but which are insufficient to preclude arcing therebetween of an electrical potential of level within a second range of levels above said first range of levels under certain fault and other conditions of weather, contamination and the like,

an elongate cut-out fuse link constructed to be actuated for interrupting an electrical circuit path therethrough in response to electrical current flow therethrough of a first predetermined magnitude, and

means for supporting said link in laterally spaced physical relationship to said insulator and in longitudinally extending physical relationship between said assemblies, and for



electrically coupling said link in normally circuit-completing relationship between said assemblies;

a current-limiting fuse component including

a pair of spaced apart connection terminals, and

a fuse element electrically coupled between said terminals and constructed to be actuated for interrupting an electrical circuit path therethrough in response to electrical current flow therethrough of a second predetermined magnitude greater than said first magnitude,

said component having the property that, upon actuation of said fuse element to interrupt the normal circuit path therethrough in response to a fault-produced current flow therethrough at least equal to said second magnitude, a back-voltage potential, which is of level within said second range, is produced and presented at said terminals, and

means for supporting said current-limiting fuse component in physical disposition adjacent but beyond the extremity of the cut-out fuse device having one of said assemblies and one end of said insulator thereat with the one of said terminals being nearest said one assembly and the other of said terminals being displaced from said one assembly further than said one terminal in a direction generally away from said other assembly, and for electrically coupling said one terminal with said one assembly to place said fuse element of said current-limiting fuse component and said fuse link of said cut-out fuse device in series-coupled electrical relationship,

said other terminal and said other assembly presenting a pair of physically remote external connection points for the apparatus which are spaced apart a distance greater than any of the aforesaid respective distances, one of said points being adapted for electrical coupling with said line and the other of said points being adapted for electrical coupling with said power-accepting means.

3,863,188

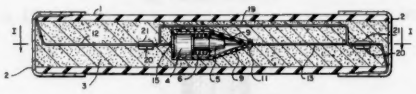
TIME-LAG CARTRIDGE FUSE FOR D-C CIRCUITS

Edward J. Knapp, Jr., Newbury, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed May 8, 1974, Ser. No. 467,950

Int. Cl. H01h *85/12*

U.S. Cl. 337—164 **8 Claims**



1. An electric fuse including in combination

a. a tubular casing of electric insulating material;

b. a pair of electroconductive terminal elements closing the ends of said casing;

c. a pair of spring-biased relatively movable contacts arranged inside said casing adjacent the center region thereof;

d. a pulverulent arc-quenching filler inside said casing;

e. a sub-housing for said pair of contacts arranged inside of said casing separating said pair of contacts from said pulverulent arc-quenching filler;

f. a first fusible element in ribbon form having a plurality of serially related points of reduced cross-sectional area, said plurality of points of reduced cross-sectional area having a predetermined minimum cross-sectional area and said first fusible element conductively interconnecting one of said pair of terminal elements and one of said pair of contacts;

g. a second fusible element in ribbon form having a plurality of serially related points of reduced cross-sectional area, said second fusible element conductively interconnecting the other of said pair of terminal elements and the other of said pair of contacts, and said second fusible element including a point of reduced cross-sectional area arranged inside said sub-housing and having a larger cross-sectional area than said predetermined minimum cross-sectional area;

h. fusible means normally precluding relative movement of said pair of contacts, said fusible means including a solder joint arranged at the point of junction of said second fusible element and said other of said pair of contacts; and

i. a fusible shunt of resistance wire shunted across said pair of contacts, said point of reduced cross-sectional area of said second fusible element having a larger cross-sectional area than said predetermined minimum cross-sectional area and at least one point of said second fusible element having said predetermined minimum cross-sectional area.

3,863,189

HOLDER FOR ELECTRIC FUSES

Angelo Urani, St. Louis, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

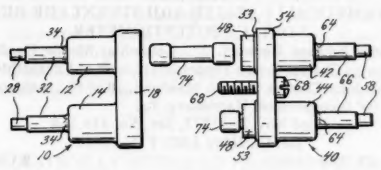
Filed Jan. 31, 1974, Ser. No. 438,252

Int. Cl. H01h *85/22*

U.S. Cl. 337—213 **5 Claims**

1. A two-pole "in-the-line" fuseholder which can hold two cartridge-type electric fuses at the same time and which comprises a first rigid member that has a first generally-cylindrical portion and a second generally-cylindrical portion and a bridge portion which are formed as a unit without interfaces therebetween, a first recess within said first generally-cylindrical portion which can accommodate one end of a first cartridge-type electric fuse, a second recess within said second generally-cylindrical portion which can accommodate one end of a second cartridge-type electric fuse, said bridge por-

tion holding said first and said second generally-cylindrical portions fixedly spaced apart with the axes of said first and second recesses parallel, a third recess in said bridge portion which is coaxial with, but which has a larger diameter than, said first recess, said third recess being in communication with, and serving as the entrance for, said first recess, a fourth recess in said bridge portion which is coaxial with, but which has a larger diameter than, said second recess, said fourth recess being in communication with, and serving as the entrance for, said second recess, said bridge portion encircling both said third and said fourth recesses and extending radially outwardly in all directions beyond both said third and said fourth recesses to constitute a sturdy and rugged protection for both said third and said fourth recesses, said bridge portion having a thickness greater than the axial dimension of either said third or said fourth recess and being coextensive with and extending axially beyond both said third and said fourth recesses, a second rigid member that has a third generally-cylindrical portion and a fourth generally-cylindrical portion and a second bridge portion which are formed as a unit without interfaces therebetween, a fifth recess within said third generally-cylindrical portion which can accommodate the other end of said first cartridge-type electric fuse, a sixth recess within said fourth generally-cylindrical portion which can accommodate the other end of said second cartridge-type electric fuse, said second bridge portion holding said third and said fourth generally-cylindrical portions fixedly spaced apart



with the axes of said fifth and sixth recesses parallel, an annular projection on said second bridge portion which is coaxial with said fifth recess and which extends axially outwardly from said second bridge portion, said annular projection having an outer diameter which is slightly smaller than the diameter of said third recess in the first said bridge portion to enable said annular projection to telescope into said third recess, said annular projection having an inner diameter greater than that of said other end of said first cartridge-type electric fuse, a second annular projection on said second bridge portion which is coaxial with said sixth recess and which extends axially outwardly from said second bridge portion, said second annular projection having an outer diameter which is slightly smaller than the diameter of said fourth recess in said second bridge portion to enable said second annular projection to telescope into said fourth recess, said second annular projection having an inner diameter greater than that of said other end of said second cartridge-type electric fuse, the first said annular projection extending into said third recess and thus into the first said bridge portion whereby said first said bridge portion also surrounds and protects said first said annular projection, said second annular projection extending into said fourth recess and thus into said first said bridge portion whereby said first said bridge portion also surrounds and protects said second annular projection, and a screw which releasably holds said first and said second rigid members in assembled relation.

3,863,190

HOLDER FOR CARTRIDGE-TYPE ELECTRIC FUSES,

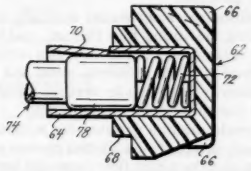
Angelo Wrani, St. Louis, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

assignor to McGraw-Edison Company, Elgin, Ill.

Filed Dec. 14, 1973, Ser. No. 424,669

Int. Cl. H01h *85/50*

U.S. Cl. 337—214 **6 Claims**



1. A closure, for a holder for cartridge-type electric fuses, which has a cylindrical contact that is dimensioned to readily accommodate a ferrule-type terminal of a cartridge-type electric fuse, a mass of insulating material encasing one end of said cylindrical contact but being spaced away from the other end of said cylindrical contact, said other end of said cylindrical contact projecting outwardly from said mass of insulating material and being open and being substantially circular in end view to readily accommodate said ferrule-type terminal of said cartridge-type electric fuse, and an elongated finger which is integral with said cylindrical contact and which constitutes a portion of the wall of said cylindrical contact that has been severed from the rest of said wall of said cylindrical contact at the free end thereof and along the elongated sides thereof, said elongated finger inclining inwardly relative to the inner surface of said cylindrical contact at an acute angle, said elongated finger normally lying in the path of said ferrule-type terminal of said cartridge-type electric fuse but being movable out of the path of said ferrule-type terminal of said cartridge-type electric fuse as said cartridge-type electric fuse is assembled with said closure, said elongated finger confronting a smooth and uninterrupted portion of said inner surface of said cylindrical contact, said elongated finger responding to movement out of the path of said ferrule-type terminal of said cartridge-type electric fuse to develop restorative forces therein which will cause said free end of said elongated finger to tend to "bite" into the surface at one side of said ferrule-type terminal of said cartridge-type electric fuse and also to force the surface at the opposite side of said ferrule-type terminal of said cartridge-type electric fuse into intimate engagement with said smooth and uninterrupted portion of said inner surface of said cylindrical contact.

3,863,191

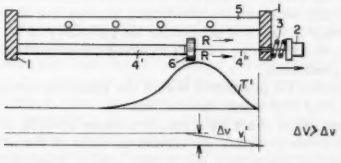
ELECTRIC CARTRIDGE FUSE WITH BLOWN FUSE INDICATOR

Erwin Salzer, Waban, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Mar. 29, 1974, Ser. No. 456,072

Int. Cl. H01h *85/30*

U.S. Cl. 337—244 **11 Claims**



1. An electric fuse including

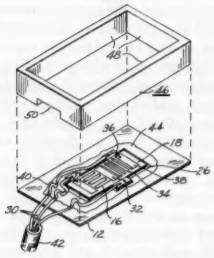
a. a tubular casing of electric insulating material;
b. a pair of electroconductive terminal elements closing the ends of said casing;
c. a spring-biased pin responsive to blowing of the fuse mounted on one of said pair of terminal elements;
d. a pulverulent arc-quenching filler inside said casing;
e. first fusible element means in ribbon form of a relatively low resistivity metal and having serially arranged points of reduced cross-sectional area interconnecting said pair of terminal elements;
f. second fusible element means normally restraining said pin against the spring bias thereof, said second fusible element means being in the form of a series arrangement of a ribbon of a low resistivity metal and of a wire of a high resistivity, high tensile strength metal interconnecting said pair of terminal elements; and
g. a local enclosure of a gas-evolving material mounted on and closely surrounding a limited portion of the length of said wire to reduce heat flow from said limited portion of the length of said wire into said arc-quenching filler and exposing other portions of said wire to unrestricted heat flow into said arc-quenching filler.

3,863,192

WATERPROOF MECHANICALLY PROTECTED SENSOR PACKAGE AND METHOD OF INSTALLATION

Irving R. Grey, 979 Ashbury St., San Francisco, Calif. 94117

Filed Jan. 24, 1973, Ser. No. 326,545
Int. Cl. G01l 1/22
U.S. Cl. 338—2 **12 Claims**



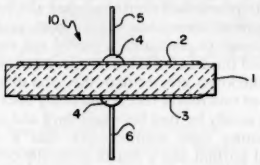
1. A sensor package adapted to be mounted on a specimen to determine physical parameters thereof, comprising the combination:
a protective mounting sheet one side of which is adapted to be adhered to the surface specimen;
at least one sensor device firmly adhered to the other side of the mounting sheet by a suitable adhesive material;
rigid enclosure means positioned around the at least one sensor device and proximate the periphery of the mounting sheet forming a cavity in which the at least one sensor is positioned;
protective fill positioned within the cavity for covering the at least one sensor device; and
the mounting sheet and enclosure means and the protective fill forming a package around all sides of the sensor device for protecting the sensor device from mechanical and environmental damage prior to and subsequent from mounting the sensor on the specimen.

3,863,193

VOLTAGE-NONLINEAR RESISTORS

Mikio Matsuura; Atsushi Iga, and Yasuo Wakahata, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 14, 1973, Ser. No. 388,169
Claims priority, application Japan, Aug. 14, 1972, 47-81643
Int. Cl. H01c 7/10
U.S. Cl. 338—20 **5 Claims**



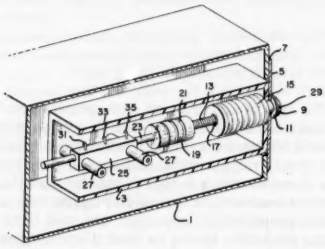
1. A voltage-nonlinear resistor of the bulk type comprising a sintered body consisting essentially of, as a major part, zinc oxide (ZnO) and, as an additive, 0.01 to 10.0 mole percent of bismuth oxide (Bi_2O_3), 0.01 to 10.0 mole percent of cobalt oxide (Co_2O_3), 0.01 to 5.0 mole percent of boron trioxide (B_2O_3) and 0.01 to 5.0 mole percent of at least one member selected from the group consisting of magnesium oxide (MgO), calcium oxide (CaO), barium oxide (BaO) and strontium oxide (SrO) and electrodes in contact with said body.

3,863,194

HERMETICALLY SEALED ADJUSTMENT FOR HIGH VOLTAGE POTENTIOMETER

Charles Edward Dorwart, Jr., Columbia; Meade Goodman Bierly; Charles Nelson Fendrich, Jr., both of Elizabethtown, and John Thomas Roland, Manheim, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 26, 1973, Ser. No. 419,168
Int. Cl. H01c 5/02; F16j 15/50
U.S. Cl. 338—164 **8 Claims**



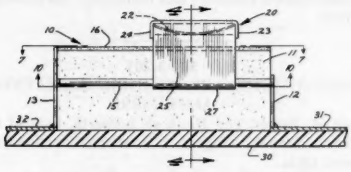
1. An externally adjustable hermetically sealed high voltage potentiometer system comprising,
an electrically insulating hermetically sealed housing,
a potentiometer in the form of a self-contained unit mounted on an interior wall of the housing adjacent one end thereof,
a linearly movable member for varying the resistance of the potentiometer slidably supported on the potentiometer unit and projecting from the unit into the housing,
rotatable means extending through the opposite end wall of the housing with its inner end terminating short of the linearly movable member,
insulating coupling means secured to the linearly movable member and provided with means cooperating with the inner end of the rotatable means upon rotation thereof to move the linearly movable member,
and expandable means surrounding said rotatable means and secured to the other end wall about the rotatable

means and to the cooperating means hermetically sealing said rotatable means from the interior of the housing.

3,863,195
SLIDING VARIABLE RESISTOR

Jack L. Bowen, Waseca, Minn., assignor to E. F. Johnson Company, Waseca, Minn.

Continuation-in-part of Ser. No. 289,657, Sept. 15, 1972, abandoned. This application July 16, 1973, Ser. No. 379,770
Int. Cl. H01c 9/02
U.S. Cl. 338—183 **10 Claims**

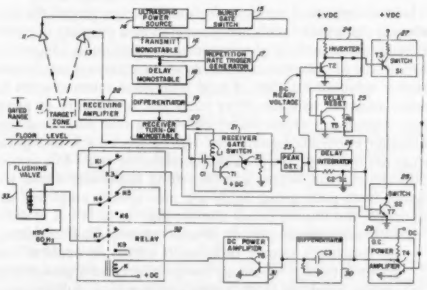


1. A variable linear resistor comprising in combination;
a. an elongated base member comprised of insulating material and having first and second surfaces;
b. a layer of conductive material at least along portions of one of said surfaces adjacent opposed side edges thereof;
c. a layer of resistive material along at least a portion of the other of said surfaces;
d. conductive slider means movably disposed on said base, said slider means including a pair of parallel spaced apart side portions disposed adjacent the side edges of said base and extending over one of the surfaces, and contact means including biasing means therefor, disposed within said slider means and over the other of said surfaces.

3,863,196
ACOUSTICALLY ACTIVATED PROXIMITY SENSOR SWITCH

Lewis M. Hilles, Hingham, Mass., assignor to Massa Corporation, Hingham, Mass.

Filed Jan. 31, 1972, Ser. No. 222,182
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R **3 Claims**

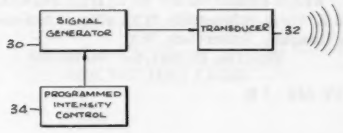


1. A sonically operated urinal flushing system comprising means for sonically detecting a sonic energy reflecting target in a predetermined zone, means for measuring a predetermined time period after said detection of said target in said zone, means for detecting the removal of said target from said zone, and means responsive jointly to said detection of the removal of said sonic energy reflecting target from said predetermined zone and to said time measuring means for flushing said system after said target has been in said zone for said predetermined time period.

3,863,197
HOLOGRAM HAVING EQUAL INTENSITY FOR SPACED APART OBJECTS

Alexander F. Metherell, Newport Beach, Calif., assignor to Actron Industries, Inc., Monrovia, Calif.

Filed Dec. 11, 1972, Ser. No. 314,198
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R **4 Claims**

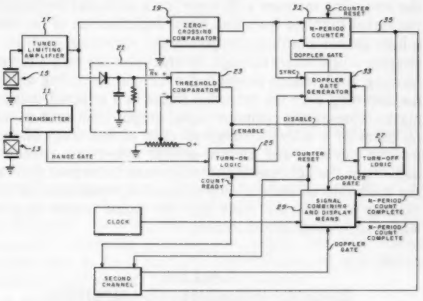


1. A system for providing at a predetermined time equal intensity reflections from a plurality of spatially separated objects comprising:
a radiation source having an output for illuminating a plurality of spaced apart objects with coherent continuous wave radiation;
control means for time varying the output amplitude of said radiation source from an initial value to a final value, said initial value being determined by the distance of the farthest object from said source, and the rate of change of amplitude being determined by the distance of the nearest object from said source.

3,863,198
DOPPLER SONAR UTILIZING PERIOD MEASUREMENT WITH THRESHOLDED RECEIVERS

Seymour D. Lerner, Plainview, N.Y., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 25, 1973, Ser. No. 409,522
Int. Cl. G01s 7/66, 9/66
U.S. Cl. 340—3 D **11 Claims**



1. Improved-accuracy doppler sonar equipment of the type in which reflected acoustic energy is evaluated during desired measurement intervals, said improvement comprising signal processing channel means having input means for providing a voltage representative of the instantaneous value of the received acoustic energy, means for detecting the envelope of the signal-plus-noise fluctuations of voltages produced by said input means, thresholding means responsive to the output of said detecting means for producing an enabling signal when and only when said envelope exceeds a predetermined threshold, zero-crossing comparator means for producing output pulses when the instantaneous voltage from said input means traverses the zero axis, N-period counter means coupled to receive pulses from said zero-crossing comparator means, means to produce a doppler gate signal in response to the occurrence of an enabling signal during a measurement interval, means to permit the N-period counter to count pulses only during the occurrence of a doppler gate signal, and means to terminate said doppler gate signal when the N-period counter

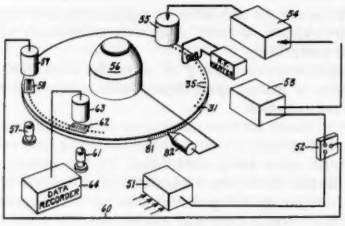
has responsed to N counts; said equipment further including means responsive to the time integral of the doppler gate signals for determining the net time required for the N-period counter to count N pulses during a given measurement interval, and means for displaying the net time so determined in desired units.

3,863,199

BEAM FORMING OF MULTIPLE SIGNALS

David E. Wood, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 15, 1961, Ser. No. 160,698
Int. Cl. G01s *7/54, 9/66*
U.S. Cl. 340—3 R **8 Claims**



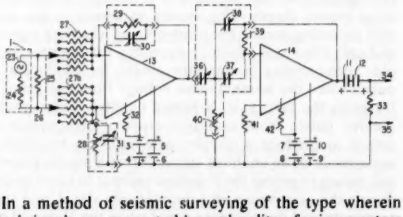
1. Apparatus for beam forming signals received from an array of signal pick-up devices including in combination recording means for receiving and recording on a recording medium the signal inputs from an array of signal input devices, said recording medium being adapted to have its light modifying characteristics changed by said recording means in accordance with the signal inputs to said recording means whereby a plurality of tracks of light modifying marks are recorded on the recording medium with each track of marks representing the signal supplied from one signal input device of the array, a light source positioned adjacent the recording medium for imaging a light beam through the tracks on the medium, beam forming mask means positioned over said recording medium for disposing over the recorded tracks in a selected sequence masks representing optimum signal output from each elemental point of a selected range of view of the array of signal pick-up devices, and electro-optical conversion means for converting the light passing through both the record track and the mask into an electric output signal representative of coincidence between the mask and the track record at points where such coincidence occurs.

3,863,200

BUILT-IN SEISMOMETER AMPLIFIER

James Willard Miller, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Jan. 15, 1973, Ser. No. 323,543
Int. Cl. G01v *1/00*
U.S. Cl. 340—15.5 GC **12 Claims**



10. In a method of seismic surveying of the type wherein electrical signals are generated by a plurality of seismometers in response to impinging seismic waves, said electrical signals are transmitted to a remote location by a transmission means, amplifying and recording said electrical signals at said remote location, the improvement comprising:

a. buffering the impedance between said seismometers and said transmission means prior to transmission of said electrical signals by increasing the feedback to electrical input signal ratio in monolithic operational amplifiers located adjacent to said seismometers, such that the output impedance of said amplifiers are substantially less than the input inpedance of said transmission means; and

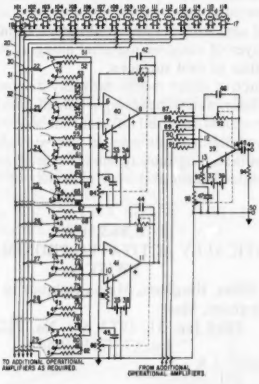
b. isolating said seismometers one from another and from the variable damping resistances characteristic of said transmission means by said monolithic operational amplifiers.

3,863,201

SEISMOMETER ARRAYS USING OPERATIONAL AMPLIFIERS

Russell M. Briggs, and Hesin ab Iorwerth, both of Calgary, Alberta, Canada, assignors to Amoco Production Company, Tulsa, Okla.

Filed May 29, 1973, Ser. No. 364,767
Int. Cl. G01v *1/36, 1/16*
U.S. Cl. 340—15.5 GC **12 Claims**



1. In an improved method of seismic prospecting of the type wherein electrical signals are generated by a plurality of essentially identical individual seismometers positioned adjacent to the surface of the earth, a plurality of group arrays are formed from a selected number of said individual seismometers located adjacent to each other such that a plurality of group array signals are produced by combining said individual seismometer electrical signals, and signals from each said group array are transmitted over a multiconductor cable to a remote multichannel amplifying and recording apparatus where said signals from each group array are individually amplified and recorded, the improvement comprising:

a. increasing the amplitude of selected individual seismometer electrical signals relative to others in each of said group arrays to maximize the portion of said group array signals resulting from waves arriving from subterranean reflecting interfaces, while minimizing the portion of said group array signals produced by noise waves;

b. reversing the polarity of said electrical signals from selected individual seismometers when required to maximize the portion of said group array signals resulting from nonvertically arriving waves from subterranean reflecting interfaces; and

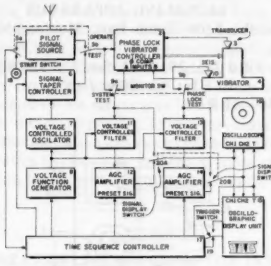
c. combining said increased amplitude and reversed polarity signals from said individual seismometers to form said group array signals such that the amplitude of said com-

bined group array signals at least equals the amplitude of the signal obtained from said group array when no increases in amplitude or reversals in polarity have been applied.

3,863,202
EARTH VIBRATOR TESTER

Ralph A. Landrum, Jr., Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Oct. 23, 1973, Ser. No. 408,354
Int. Cl. G01v *1/14*
U.S. Cl. 340—17 **16 Claims**



1. A method for evaluating the performance of an earth vibrator used to inject seismic signals into the earth substantially corresponding to a predetermined pilot signal which comprises:

a. generating a predetermined varying frequency test signal chosen to evaluate the performance of said earth vibrator over the range of frequencies used in seismic prospecting;

b. actuating said vibrator with said test signal in lieu of said pilot signal such that seismic signals are injected into the earth in correspondence with said test signal;

c. producing a base plate transducer signal corresponding to said injected seismic signal;

d. filtering said base plate transducer signal to attenuate harmonics and noise produced by said vibrator during said seismic signal injection process;

e. filtering said test signal in a manner essentially identical to that used in step (d) above for the purpose of introducing substantially the same phase shift in said test and base plate signals; and

f. displaying said filtered test and base plate signals whereby an operator of said earth vibrator can monitor his vibrator's performance by observing the phase relationship between said test and base plate signals.

3,863,203
METHOD AND APPARATUS FOR CONTROLLING THE DATA RATE OF A DOWNHOLE ACOUSTIC TRANSMITTER IN A LOGGING-WHILE-DRILLING SYSTEM

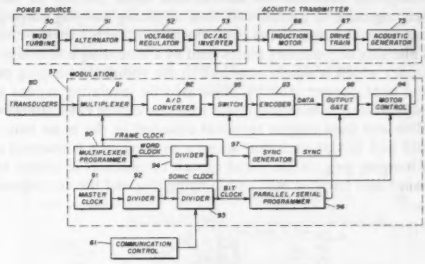
Bobbie J. Patton, Dallas; James H. Sexton, and John W. Harrell, both of Duncanville, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 272,838, July 18, 1972, Pat. No. 3,800,277. This application May 4, 1973, Ser. No. 357,315
Int. Cl. G01v *1/40*
U.S. Cl. 340—18 LD **9 Claims**

1. A method for controlling from the surface of the earth the rate at which a downhole acoustic transmitter of a logging-while-drilling system transfers data derived from measured downhole conditions to the surface of the earth, comprising:

a. varying from the surface of the earth at least one of the operating parameters of the logging-while-drilling system,

b. producing at a downhole location a control signal of a first state when said operating parameter is within a predetermined range and of a second state when said operating parameter is outside of said predetermined range, and

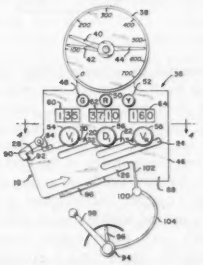


c. setting the data rate of the transmitted acoustic signal in response to said control signal.

3,863,204
INTERLOCK FOR AIRCRAFT TAKE-OFF SAFETY MONITOR

Harold D. Hoekstra, 253 N. Columbus, Arlington, Va. 22203

Filed Nov. 15, 1973, Ser. No. 415,930
Int. Cl. G08g *5/02*
U.S. Cl. 340—27 R **11 Claims**



1. In combination with an aircraft take-off safety monitor including means for storing desired values of at least one aircraft performance variable as a function of a different aircraft performance variable, means for comparing the actual said aircraft performance variable with the stored said aircraft performance variable, and means comprising one or more manually adjustable controls for setting into said storage means data at least partially determinative of said desired values of said aircraft performance variable:

a. portable record means for storing said data,

b. data transfer means responsive to said record means for transferring said data from said record means to said storing means by adjusting said controls to set said data into said storing means, and

c. receiver means for receiving said record means and positioning same to permit actuation of said data transfer means.

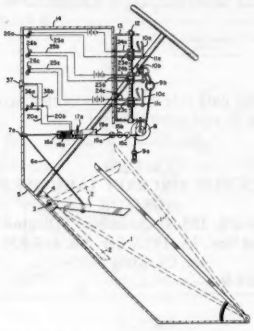
3,863,205
AUTOMOBILE OVER SPEED PREVENTION DEVICE

Hsian Chun-Chih, 2 Lane 60, Tai-Shun St., Taipei, Taiwan

Filed July 6, 1972, Ser. No. 236,155
Int. Cl. G08g *1/09*
U.S. Cl. 340—32 **5 Claims**

1. A vehicle speed limiting and overspeed indicating system comprising an accelerator support interposed in the path of a hind-pivoted accelerator pedal, a plurality of hanging cords fastened to said accelerator support and movable in response to pivotal motion of said support as the accelerator pedal is

operated, an extension spring interposed between a first and second portion of each hanging cord, a length adjusting bolt interposed between the second and third portion of each hanging cord, a plurality of load adjusting hanging rings attached at the end of the third portion of each hanging cord, a plurality of mounting plates held by a mounting bolt to a bolt holder which is rigidly attached to the vehicle, a hanging peg and bent copper terminal separated by insulating means attached to each mounting plate with one end of each mounting plate and bent copper terminal attached to the inner side of said bolt holder such that when a hanging ring is inserted on a hanging peg an electrical circuit connection is closed between said hanging peg, and hanging ring and the corresponding bent copper terminal to actuate speed limit indicating means on the vehicle both externally and internally wherein the combination of each hanging cord, relevant extension spring, hanging ring, hanging peg, and bent copper terminal defines a particular speed limit, a copper sleeve enveloping the bent end of the extension spring at the end nearest to the second portion of the hanging cord and acting as an electrical contact terminal and a copper foil attached to the extension spring and acting as a second terminal such that said terminals come in contact with each other during extension of said extension spring when the speed limit is exceeded to actuate both internal and external vehicle overspeed indicating means.



3,863,206

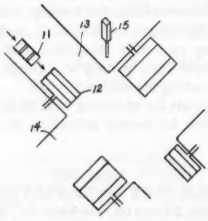
DIGITAL VEHICLE DETECTOR

Lee C. Rabie, 200 S.W. Michigan St., Seattle, Wash. 98106

Filed Mar. 12, 1974, Ser. No. 450,412

Int. Cl. G08g 1/08

U.S. Cl. 340—38 L **12 Claims**



1. In combination with a plurality of traffic lanes leading to an intersection, a vehicle detection and traffic control system comprising a plurality of detection loops mounted in respective traffic lanes for inductive coaction with vehicles approaching the intersection, respective oscillators operatively connected to the loops so that said loops control the periods of the oscillators and so that said periods are changed by vehicles on said lanes approaching said intersection, time-sharing means to sequentially scan the oscillator outputs, means to derive data corresponding to the periods of the oscillators, respective memories associated with the oscillators, means to store the time-shared data in said respective memories, means to compare data furnished to the memories with previously stored data therein and to derive comparison data, traffic signal means, and means including time-sharing decoding means to furnish commands to said traffic signal means in accordance with the comparison data.

3,863,207

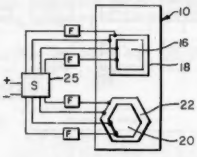
SIGNALING APPARATUS

Ottavio Galella, 5306 Gouin East, Montreal-Nord, Quebec, Canada

Filed Jan. 29, 1973, Ser. No. 327,809

Int. Cl. G08g 1/095

U.S. Cl. 340—41 R **7 Claims**



1. A signaling apparatus including a housing having two adjacent illuminable signaling means; a first of said signaling means including a red signal light means having a first geometrical configuration and an amber light means surrounding said red signal light means and having an outer contour substantially similar in shape to the said first geometrical configuration of said red signal light means; a second of said signaling means including a green signal light means having a second geometrical configuration distinct from the said first configuration of the red signal light means and a second amber signal light means surrounding the green signal light means and having a contour substantially similar in shape to the said second geometrical configuration of the green signal light means.

3,863,208

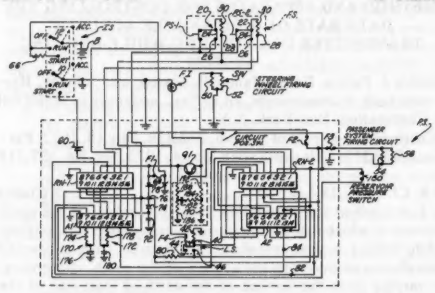
VEHICLE SAFETY SYSTEM CONTROL CIRCUIT HAVING A MALFUNCTION INDICATOR

Morton S. Balban, Oak Park, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 332,440, Feb. 14, 1973, abandoned. This application Feb. 19, 1974, Ser. No. 443,582

Int. Cl. G08b 21/00

U.S. Cl. 340—52 H **43 Claims**



1. A vehicle safety system control circuit comprising a crash sensor series circuit and a firing series circuit, said crash sen-

sor series circuit including crash sensor switch means having a normal unactuated condition and an actuated condition representative of a crash condition, said firing series circuit including electrically energizable actuator means for upon energization actuating a vehicle safety device, power supply circuit means for providing operating voltage for said circuits, second switching means having a normal condition and a actuated condition for connecting said sensor series circuit and said firing series circuit together in series with said power supply circuit means so that when said sensor switch means is in its actuated condition an energizing circuit is completed through said sensor switch means and said second switch means for firing current to flow from said power supply circuit means to energize said actuator means, means for continuously effecting flow of a first test current from said power supply circuit means through said sensor series circuit while said second switch means is in its normal condition, means for continuously effecting flow of a second test current from said power supply circuit means through said firing series circuit while said second switch means is in its normal condition, and output circuit means responsive to said test currents for providing an output indication as to a circuit malfunction in either said sensor series circuit or in said firing series circuit in dependence upon the magnitudes of said test currents.

3,863,209

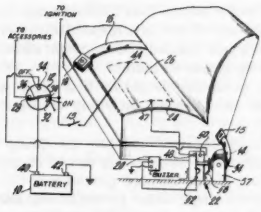
VEHICLE SEAT BELTSTARTER MOTOR INTERLOCK AND SEQUENTIAL WARNING SYSTEM

Jesse R. Hollins, 40 Stoner Ave., Great Neck, N.Y. 11021

Continuation-in-part of Ser. No. 295,506, Oct. 6, 1972, abandoned, which is a continuation-in-part of Ser. No. 230,678, March 1, 1972, abandoned. This application Nov. 3, 1972, Ser. No. 303,495

Int. Cl. B60r *21/10*

U.S. Cl. 340—52 E **9 Claims**



1. A vehicle seat belt warning system comprising a source of electrical power, an ignition switch including an ignition on contact terminal and a switch off contact terminal, means operated by an ignition key for electrically connecting said source of power selectively to said ignition on contact terminal and to said ignition off contact terminal, a first seat belt assembly including a first retractable belt, a warning device, and means for activating said warning device when said source of power is electrically connected to the switch off contact terminal and said first retractable belt is unretracted and for deactivating said warning device when said first retractable belt is retracted when said source of electrical power is connected to said switch off contact terminal and for activating said warning device when said source of electrical power is connected to said switch on contact terminal and said first retractable belt is retracted and for deactivating said warning device when said source of electrical power is connected to the switch on contact terminal and the first retractable belt is unretracted.

3,863,210

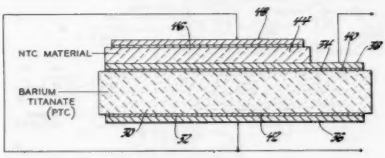
LIQUID LEVEL SENSOR HAVING AN INTEGRAL PTC AND NTC THERMISTOR

James P. Roland, Detroit, and Matthew C. McKinnon, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed July 30, 1973, Ser. No. 383,708

Int. Cl. G08b *21/00*

U.S. Cl. 340—59 **3 Claims**



1. A composite thermally responsive resistor device for automotive liquid level sensing applications, said device comprising a barium titanate first body member, said first body member having a positive temperature coefficient of electrical resistance which dominates total device resistance at low temperatures, said first body member having two major faces, a second body member of a material having a negative temperature coefficient of electrical resistance which dominates total device resistance at high temperatures, said second body member having two major faces, a thin metallic electrode layer on each of said faces of said body members, at least one of said layers serving as a common electrode for both of said body members, said electrodes on said first and second body member major faces providing means for passing electrical current therethrough and generating heat within at least one of said body members, said first body member being connected electrically in parallel with said second body member through said common electrode, and an intimate thermal association between said first and second body members whereby heat generated in one body member is conductively transferred to the other body member to produce a device having an effective total resistance which gradually decreases with increasing temperature except for a narrow predetermined temperature range in which the resistance increases to inhibit undesirable regenerative reduction of device resistance.

3,863,211

DEVICE FOR WARNING OF MALFUNCTIONS OF ENGINE PRESSURE SYSTEMS AND OF ITSELF

Maxwell E. Latham, Jr., P.O. Box 468, Venice, La. 70091

Filed May 21, 1973, Ser. No. 362,565

Int. Cl. B60q *1/00, 5/00;* **F16n** *29/04*

U.S. Cl. 340—60 **2 Claims**

1. In combination with an engine having a variable-pressure oil system and an electrical power supply, a warning device comprising:

a. Engine-running sensing means connected to the engine and electrical power supply and responsive thereto for sensing if said engine is running and to provide an electrical output in accordance therewith;

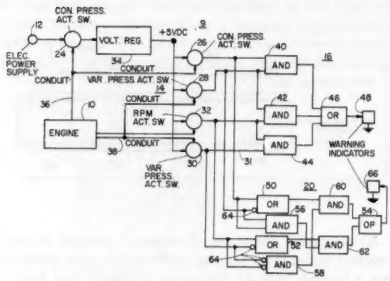
b. Variable-pressure sensing means connected to said engine and electrical power supply and responsive thereto for sensing variations of pressure in said variable-pressure oil system and to provide and electrical output in accordance therewith;

c. Speed sensing means connected to said engine and electrical power supply and responsive thereto for sensing rpm of said engine and to provide an electrical output in accordance therewith;

d. First logic circuit means connected to the respective electrical outputs of said engine - running sensing means,

pressure and speed sensing means for comparison and responsive thereto produce an electrical output indicative of engine malfunctioning;

e. Second logic circuit means connected to the respective electrical outputs of said engine - running sensing means, pressure and speed sensing means, and in parallel circuit



with said first logic circuit means, for comparison and responsive thereto provide an electrical output indicative of said sensing means malfunctioning;

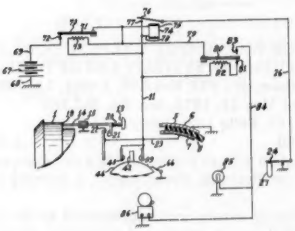
f. And warning indicator means connected to respective electrical outputs of said first and second logic circuit means for energization thereby to warn of malfunctioning.

3,863,212

THIEF ALARM FOR A VEHICLE OR THE LIKE

Wladimir Nyc, 5254 San Jose Blvd., Jacksonville, Fla. 32207

Continuation-in-part of Ser. No. 21,368, March 20, 1970, abandoned. This application July 28, 1972, Ser. No. 276,073
Int. Cl. B60r *25/10*
U.S. Cl. 340—64 **18 Claims**



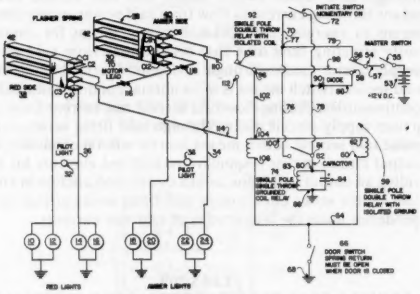
1. In a door alarm system for a vehicle comprising two doors each provided with a respective lock and a respective normally open switch which closes in response to opening of the door, said switches being connected in parallel, a double throw relay including switch means connected in series with said switches, each said door lock comprising a double throw switch connected to the coils of said relay and selectively operable in response to operation of the respective lock to open and close said switch means.

3,863,213

VARIED CONTROL VEHICLE LIGHT WARNING SYSTEM

Joseph E. Baader, 333 Holiday Dr., Springfield, Ohio 45505

Continuation-in-part of Ser. No. 335,212, Feb. 23, 1973. This application Nov. 9, 1973, Ser. No. 414,471
Int. Cl. B60q *1/26*
U.S. Cl. 340—74 **4 Claims**



1. In a vehicle light warning system having a door, caution indicating lights and stop indicating lights mounted on the vehicle, and an electric circuit on the vehicle incorporating said lights for selective operation thereof:

A. an electric power source in said circuit;

B. a caution light circuit having said caution light indicating lights therein;

C. a stop light circuit having said stop indicating lights therein;

D. a single motor driven dual flasher means including first and second sets of contacts respectively operatively connected with said caution and stop light circuits for selective flashing actuation thereof;

E. a single pole, double throw first relay with isolated ground in said circuit including a rotor and plural contacts;

F. a vehicle grounded momentary on spring return door switch open when said door is closed connected to one said contact of said isolated ground relay;

G. a single pole, single throw grounded coil second relay in said circuit having a plurality of contacts;

H. a spring return momentary on initiate switch in said circuit having an operating control arm and connected by leads to contacts of said grounded coil relay, and to a contact of said isolated ground relay;

I. two contacts of said grounded coil relay being interconnected, and a capacitor connected in parallel with said coil and then to ground through said door switch, and a contact being connected by a lead to a contact of said isolated ground relay with a single acting direction diode interconnected in said lead;

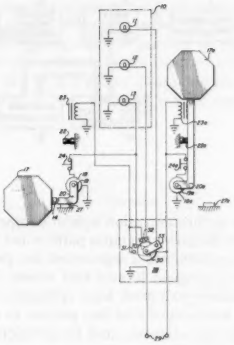
J. a single pole double throw third relay having a plurality of contacts, with isolated coil in said circuit including a rotor connected by a lead to contact of said isolated ground relay, and through a lead to a second contact of said isolated ground relay, said rotor being connected by a lead to a contact of said isolated coil relay, a contact of said relay being connected to said door switch, a contact connectable to a contact of said first set of flasher contacts, and a contact connectable to a contact of said second set of flasher contacts; and

K. two single acting diodes connected respectively in motor circuit leads to said respective contact sets.

3,863,214
SUPPLEMENTAL VISUAL DISPLAY FOR TRAFFIC SIGNAL

John W. Kerr, Jr., 2937 W. Marshall Ave., Phoenix, Ariz. 85017

Filed July 19, 1973, Ser. No. 380,825
Int. Cl. G08g 1/097
U.S. Cl. 340—131 1 Claim



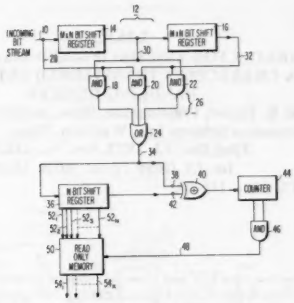
1. For use in combination with an electrical signalling device which includes
an electrical controller,
a source of continuous electrical energy supplied to said controller, and
at least one perceptible signal periodically activated in response to said controller,
a supplemental visual display device cooperating with said signalling device and for operating in response to failure of said perceptible signal, said visual display comprising:
a. an electric motor having a power output shaft freely rotatable in one direction and rotatable in the other direction in response to an electric signal;
b. an arm secured at one end to said power output shaft and rotatable therewith to freely fall in one direction and to be raised thereby in the other direction;
c. a plate bearing selective indicia carried by the free end of said arm;
d. electromagnetic means for normally retaining said arm in a raised position; and
e. normally closed switch means associated with the electric signal to said motor and opened by said arm when said arm is retained by said electromagnetic means.

3,863,215
DETECTOR FOR REPETITIVE DIGITAL CODES

Ellwood Patrick McGrogan, Jr., Cherry Hill, N.Y., assignor to RCA Corporation, New York, N.Y.

Filed July 3, 1973, Ser. No. 376,222
Int. Cl. G06f 11/08; G08c 25/00
U.S. Cl. 340—146.1 BA 16 Claims

1. A detector for detecting the presence of an incoming repetitive code having N bits of digital information, said detector comprising:
signal delay means for providing said N bits of said incoming code with a first and a second time delay;
majority vote means responsive to said incoming code, said first time delayed code and said second time delayed code for providing bits comprising a majority vote signal related to the nature of the majority of the corresponding bits in said incoming code, said first time delayed code and said second time delayed code;
a run-length counter means comprising a counter and an N bit shift register responsive to the bits in said majority vote signal for advancing a count in said counter for one condition related to the majority vote bits and for resetting the count for another condition related to the major-

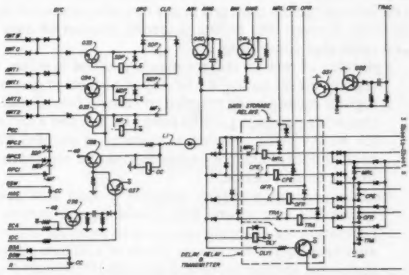


ity vote bits and for providing said majority vote signal with an N bit delay; and
means responsive to a specified count in said counter and to the N bits in said N bit shift register for providing an identification signal corresponding to the particular incoming code.

3,863,216
ARRANGEMENT AND METHOD FOR ASSURING THE VALIDITY OF TRANSFERRED DATA

Truman R. Mila, Batavia, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 14, 1973, Ser. No. 397,504
Int. Cl. G08b 29/00; H04m 3/08
U.S. Cl. 340—146.1 R 8 Claims



1. In a common control communication switching system including a call processor for processing calls through the system and a receiver for receiving MF and dial pulse information including means for forwarding this information in checkable code signals to the call processor via a plurality of data leads and together with control signals via control leads, the information being received at any time with respect to the time cycle of the call processor and the latter including means operating to accept the code signals forwarded to it only when code signals and a control signal are simultaneously present on both the plurality of data leads and the control leads, respectively, the improvement comprising an arrangement for preventing the false recognition of information presented by said receiver to said call processor, said arrangement comprising:
a plurality of data leads and a plurality of control leads coupled to said call processor;
said means for forwarding said checkable code signals including means for delaying said control signals forwarded to said call processor via said con-

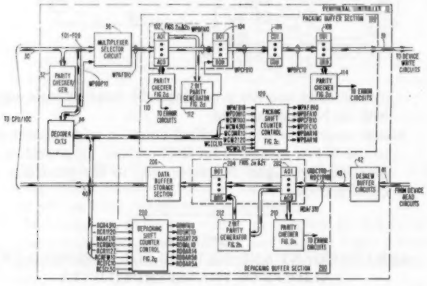
trol leads for a pre-established time interval after said code signals on said data leads have been forwarded to said call processor to insure the receipt of said code signals on said data leads; whereby the validity of said code signals on said data leads are insured if a control signal also is present on said control leads.

3,863,217

APPARATUS FOR ASSEMBLING AND DISASSEMBLING DATA CHARACTERS TRANSFERRED BETWEEN DATA HANDLING DEVICES

Donald R. Taylor, Framingham, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 13, 1973, Ser. No. 424,528
Int. Cl. G05b *23/02*; **H03k** *13/34*
U.S. Cl. 340—146.1 C **33 Claims**



1. A peripheral controller system coupled to an input/output bus and to at least one magnetic tape peripheral device, said system including apparatus for packing bits of data characters having a first number of data bits received from said bus, into characters arranged in any one of a number of predetermined formats and having a second number of data bits, said apparatus comprising:

a plurality of register storage means coupled in series, each register means having a plurality of bistable stages, a first register means being coupled to receive bits of said data character signals in parallel from said bus and a last register means being coupled to transfer in parallel bits of packed data character signals in said one predetermined format to said device;

modulo generation means coupled to said first register means and to a second one of said register means, said generation means being operative to generate intermediate check signals for groups of bits of said data character signals for application to at least a predetermined stage of said second register means; and

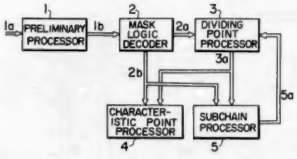
control means coupled to said plurality of register storage means, said control means coupled to receive a number of mode control signals, said control means being responsive to said mode control signals to condition said stages of said first and second register means and said generator means respectively to pack said data characters as received from said bus by shifting the bits of said characters from said first register means into second register means forming characters having said second number of data bits arranged in said one predetermined format and concurrently generate said intermediate check signals applied to said predetermined stage of second register means for producing at least one resulting check bit for each of said data characters for transfer through the remaining ones of said plurality of register means with corresponding ones of said data characters for enabling subsequent verification that said data characters were packed and transferred without error.

3,863,218

PATTERN FEATURE DETECTION SYSTEM

Mitsunori Oka; Shinji Yamamoto, both of Hachioji, and Shozo Kadota, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 26, 1973, Ser. No. 327,157
Int. Cl. G06k *9/16*
U.S. Cl. 340—146.3 AE **12 Claims**



1. A pattern feature detection system comprising:

first means for receiving an input pattern and for converting said input pattern into a segmented line pattern;

second means, coupled to said first means, for subjecting said line pattern to a mask logic operation, by comparing sequential portions of said line pattern to each of a prescribed number of masks and for providing outputs respectively representative of

a branch number corresponding to the total number of said masks, the individual line patterns of which correspond to the sequential portion of the line pattern being compared, an output direction code number corresponding to the total number of masks among selected ones of said masks, the individual line patterns of which correspond to the sequential portions of the line pattern being compared, and

a direction code corresponding to the directions defined by those masks among said selected ones of said masks, the individual line patterns of which correspond to the sequential portions of the line pattern being compared,

and for producing an output representative of whether a point on said line pattern subjected to said mask logic operation is a characteristic point or a non-characteristic point in accordance with the values of said branch and output direction code numbers;

third means, responsive to the output of said second means, for determining whether a non-characteristic point is a dividing point or a continuous point, by detecting whether the slope at a point of the line pattern is monotonously increasing, decreasing or unchanged;

fourth means, responsive to said second and third means, for storing information representative of the coordinates of the line pattern of each characteristic point and each dividing point; and

fifth means, responsive to said second and third means, for generating and storing a code and a number representative of each sub-chain into which said segmented line pattern is divided between respective dividing and characteristic points.

3,863,219

DATA PREPROCESSING SYSTEM FOR CHARACTER RECOGNITION SYSTEMS

Gene D. Rohrer, Endwell, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 9, 1973, Ser. No. 404,462
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 C **10 Claims**

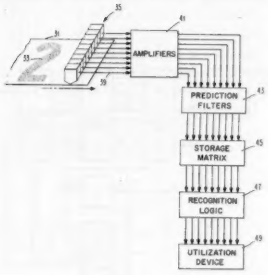
1. A character recognition system including a data preprocessing system for compensating for errors in scanning characters to be recognized, comprising in combination,

scanning means for scanning characters to be recognized and generating scanning signals in response to said scanning,

amplifier means having an input and an output, the input being connected to said scanning means to receive signals therefrom and amplify the signals,

recognition circuit means, and

feedback compensating means comprising a Kalman filter network connected to the output of said amplifier means and the input of said recognition circuit means, said filter network being selected and arranged to compensate for inherent transfer characteristics in said scanning means and said amplifier means, said filter network including means for feeding back a portion of the signal at the output of said network to the input of said network, said network having a transfer characteristic similar to the combination of said scanning means and said amplifier means.



3. A predictive filter system for a signal channel of a character recognition system comprising, in combination,

a first amplifier having an input terminal connected to said channel to receive input signals therefrom, and an output terminal connected to said channel to deliver output signals thereto,

a second amplifier having an input terminal and and output terminal,

a first passive impedance network connected between the output terminal of said first amplifier and the input terminal of said second amplifier, and

a second passive impedance network connected between the output terminal of said second amplifier and the input terminal of said first amplifier,

said amplifiers and said networks having a transfer characteristic similar to that of said channel which removes the distortion effects in said channel.

3,863,220

LOOP TYPE DATA HIGHWAY SYSTEM FOR DATA TRANSMISSION

Akira Osawa, and Hajime Yasuda, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

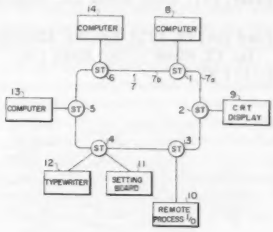
Filed Dec. 7, 1972, Ser. No. 312,973

Claims priority, application Japan, Dec. 10, 1971, 46-100439

Int. Cl. H04q *9/00*

U.S. Cl. 340—147 LP **18 Claims**

1. A looped highway system for data transmission comprising a plurality of stations connected in series through a common bus to form a closed loop in which data transmission between apparatuses connected to the stations is carried out through the corresponding statons, wherein each of said stations includes a receiver, a transmitter and a gate control device for controlling data transmission from said receiver and to said transmitter, means for applying to said gate control device a gate control signal upon detecting whether the common bus is occupied or not for data transmission from any of the apparatuses, means for transmitting a specific priority code prdetermined for each said station through said transmitter to the common bus, said specific priority code being indicative of the priority order of each said station relative to the other stations connected in said closed loop, means for comparing the transmitted specific priority code with a priority



code which is received by each said station, and means for permitting data transmission from the apparatus connected to each said station subsequently to the transmission of said specific priority code when the transmitted priority code is identical to the received priority code and the common bus is not occupied by any apparatus connected to the other stations.

3,863,221

METHOD OF DRIVING LIQUID CELL DISPLAY PANEL

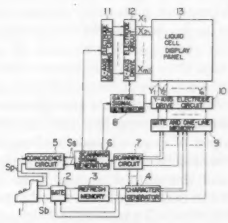
Tetsunori Kaji, Kokubunji, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 28, 1973, Ser. No. 345,517

Claims priority, application Japan, Mar. 29, 1972, 47-30771

Int. Cl. G08b *5/36*

U.S. Cl. 340—166 **6 Claims**



1. A method of driving a liquid cell display panel having a plurality of X-axis electrodes, a plurality of Y-axis electrodes disposed perpendicular to the X-axis electrodes respectively, and liquid cells disposed respectively at the points where the X-axis electrodes cross the Y-axis electrodes, the method comprising producing a scanning signal voltage having a first voltage portion to be applied to the liquid cell when the liquid cell is addressed and a second voltage portion to be applied to the liquid cell when the liquid cell is not addressed, the polarities of the first and second voltage portions being opposite to each other with respect to a predetermined reference level and being inverted every predetermined number of time frames, producing a display signal voltage having a third voltage portion to be applied to the liquid cell when the liquid cell is addressed and a fourth voltage portion to be applied to the liquid cell when the liquid cell is not addressed, the polarities of the third and fourth voltage portions being opposite to each other with respect to the predetermined reference level and being inverted every predetermined number of time frames, and applying the scanning signal voltage to each X-axis elec-

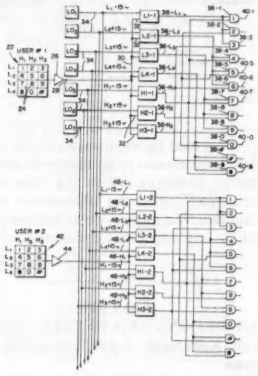
trodes sequentially and periodically while applying the display signal voltage of a predetermined display information to each Y-axis electrode for driving the liquid cell display panel.

3,863,222

TONE SIGNAL SWITCHING SYSTEM

Irving Horowitz, 18 Farm Ln., Eatontown, N.J. 07724, and John W. Baker, 1317 Stony Brook Ln., Mountainside, N.J. 07092

Filed Dec. 19, 1973, Ser. No. 426,340
Int. Cl. H04m *11/00;* **H04q** *1/45*
U.S. Cl. 340—171 PF **8 Claims**



1. Signal routing switching apparatus comprising switch means having a plurality of switch positions, tone signal generator means operative in response to the actuation of said switch means to selected switch positions to produce first and second component tone signals representative of each of said selected switch position, a plurality of local oscillators respectively operative to produce at their respective outputs, local oscillator signals corresponding to each of said tone signals producible by said tone signal generator means, a plurality of demodulators respectively corresponding to each of said tone signals producible by said tone signal generator means, each of said demodulators having first and second input and an output, the output of each of said local oscillators being respectively connected to said first input of the corresponding demodulator and the output of said tone signal generator being connected to each of said second input of said demodulators, a plurality of AND gates respectively corresponding to said selected switch positions, each of said AND gates having first and second inputs respectively connected to the output of the demodulator which corresponds to the first and second tone signals representing the selected switch position.

3,863,223

CONTROL SYSTEM FOR CODED DATA TRANSMISSION

Cyrille Gossett, Danjoutin, France, assignor to Societe Industrielle Honeywell Bull (Societe Anonyme), Paris, France

Filed Sept. 5, 1972, Ser. No. 286,532
Claims priority, application France, Sept. 22, 1971, 71.34085
Int. Cl. G06f *3/00;* **G08b** *29/00;* **G08c** *25/00*
U.S. Cl. 340—172.5 **8 Claims**

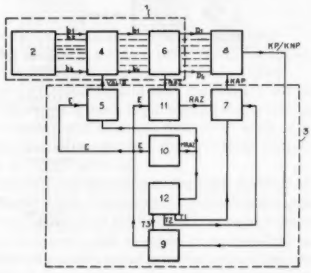
1. A control system for selectively entering data in a central processor, comprising in combination:

a data generator having k outputs at which a binary word appears corresponding to data generated;

a central processor for receiving said binary word;

an authorization circuit and a buffer store connected in series between said data generator and said central processor to transfer said binary word to the central processor; and

a control circuit assembly for controlling transfer of said binary word to said central processor, said assembly comprising an authorization control circuit, clock means, a first setting circuit, a second setting circuit, an error detecting circuit, and a communication circuit; said clock means being responsive to operation of said data generator for producing a train of clock pulses and including a resettable counter providing a plurality of count outputs; said authorization control circuit including means responsive to a binary word output at said *k* outputs of the data generator, a first setting signal and a signal indicating lack of error for producing sequentially occurring first and second reset signals and a validating signal occurring after said first reset signal, said validating signal being connected to said authorization circuit to cause said binary word to be passed to said buffer store; said first setting circuit including means responsive to said first reset signal, said clock pulses and said signal indicating lack of error for producing said first setting signal; said second setting circuit including means responsive to said second reset signal, said clock pulses and said signal indicating lack of error for producing a second setting signal subsequent to said validating signal; said buffer store responsive to said second setting signal to pass said binary word to said control processor; said communication circuit including means responsive to said second reset signal, said second setting signal and certain of said count outputs for producing a transfer signal subsequent to said record setting signal; said central processor being responsive to said transfer signal to produce an acceptance signal if said binary word is acceptable thereby; and said error detection circuit including means responsive to non-overlap of said acceptance signal and said first reset signal for maintaining said signal indicating lack of error; said counter of the clock means being reset by said first setting signal.



3,863,224

SELECTIVELY CONTROLLABLE SHIFT REGISTER AND COUNTER DIVIDER NETWORK

Harry Arnold Alexander, Waynesboro, Va., assignor to General Electric Company, Salem, Va.

Filed Jan. 30, 1973, Ser. No. 327,941
Int. Cl. G06f *7/39;* **H03k** *21/36, 23/02*
U.S. Cl. 340—172.5 **7 Claims**

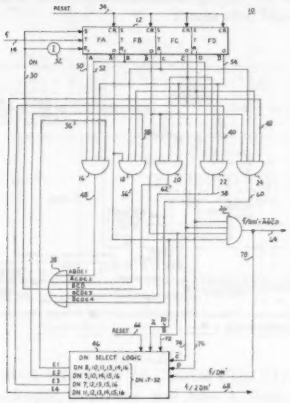
1. A divider network for dividing sequentially occurring input signals comprising:

a. a counter including one through N binary cells, each capable of achieving first and second states and generating binary output signals representative of said states, said counter responsive to said input signals to effect the counting thereof and said one of said binary cells further being responsive to applied control signals for controlling the states of said one binary cell, the state of said one

binary cell being sequentially transferred through the other binary cells of said counter to continuously control the count therein during a divide sequence;

b. select means for generating at least one output enable signal representative of a number by which said input signals are to be divided;

c. decode means responsive to the binary output signals from said binary cells and to the at least one output enable signal from said select means for providing the control signals to said one binary cell, said control signals changing during the divide sequence to alter the state of



said one binary cell in accordance with the number specified by the at least one output enable signal when said counter achieves a specified count associated with an individual one of said at least one output enable signal; and

d. output means responsive to the binary output signals from said binary cells for generating an output signal representative of a number of said input signals applied to said counter divided by the number represented by the at least one output enable signal from said select means when the Nth binary cell is in its first state and the remaining binary cells are each in their second state.

3,863,225

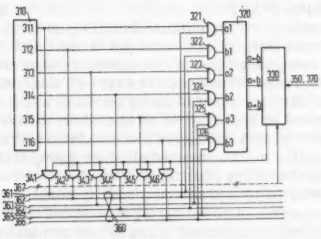
PRIORITY CONTROLLED SELECTION OF DATA SETS IN A DATA PROCESSING SYSTEM

Gunter Preiss, Paderborn-Wewer, Germany, assignor to Nixdorf Computer AG, Paderborn, Germany

Filed Feb. 27, 1973, Ser. No. 336,326

Int. Cl. G06b *11/32*; G06f *9/18*

U.S. Cl. 340—172.5 **19 Claims**



1. A method of control of a data processing system whereby priority-controlled selection of one of a plurality of functional units with different connection priorities and which may be simultaneously signalling requests for connection to a common processor allocated thereto is effected, said method including allocating to each functional unit a priority criterion signal for connection of that unit to said common processor, each such signal being of peculiar value to the unit to which it is allocated and identifying the degree of priority of said unit; feeding into a common communication path leading in parallel from all the functional units to the common processor, priority criterion signals from those functional units which are at the time requesting connection; comparing the value of the priority criterion signal allocated to each requesting functional unit with the total value produced by the composite of the signals present on said path from all requesting functional units; and in dependence upon the result of comparison being equal to or different from a predetermined value for each functional unit selecting for connection with that functional unit which, at the time, is of the highest priority upon an equal comparison, and by disconnecting simultaneously requesting functional units of lower priority for which the result of the comparison is different from the predetermined value.

3,863,226

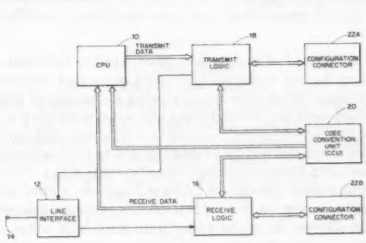
CONFIGURABLE COMMUNICATIONS CONTROLLER HAVING SHARED LOGIC FOR PROVIDING PREDETERMINED OPERATIONS

Scott W. Ryburn, Lexington, Mass., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Jan. 2, 1973, Ser. No. 320,380

Int. Cl. G05f *3/00*; G06f *5/00*

U.S. Cl. 340—172.5 **18 Claims**



1. Apparatus for transferring data characters, each having a plurality of bits, between a data processor and a communication line, said apparatus comprising:

A. receive logic for converting bit serial characters received from said line to bit parallel characters;

B. transmit logic for converting bit parallel characters to bit serial characters for transfer over said lines;

C. bit routing means included in both said receive logic and said transmit logic;

D. a code unit coupled to receive bit parallel characters from said receive logic and from said transmit logic, said code unit comprising

1. means for detecting the identity of said characters; and

2. means for performing predetermined logic operations in response to the identity of certain ones of said characters;

E. means for configuring said bit routing means included in said receive and transmit logic in order to adapt to a predetermined number of bits in said characters;

F. means, included in the coupling between said code unit and said receive logic and said transmit logic, for enabling said code unit to be time shared between said receive logic and said transmit logic; and

G. wherein said means for detecting comprises:

1. a comparator having first and second inputs;

2. means for selecting either said character from said receive logic or said character from said transmit logic for coupling to said first input;

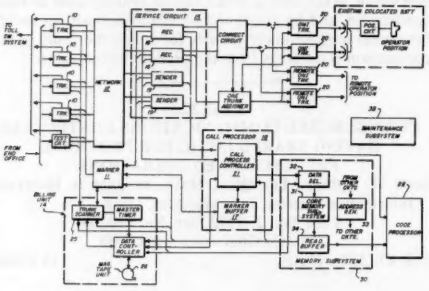
3. means for providing a plurality of code characters;
4. means for sequentially selecting each of said plurality of code characters for coupling to said second input; and
5. means for indicating the identity of said characters provided by either said receive logic or said transmit logic when a positive comparison is made by said comparator.

3,863,227

METHOD AND ARRANGEMENT FOR TESTING A CORE MEMORY

Rafael A. Sanabria, Elmhurst, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 17, 1973, Ser. No. 398,132
Int. Cl. G06f *11/04*
U.S. Cl. 340—172.5 **4 Claims**



1. A method of testing a memory system including a core memory having a plurality of cores as storage elements and electronic control elements including a plurality of digit drivers, digit switches, word drivers and word switches for accessing said plurality of cores to write words into said core memory locations defined by an address and to read said words out of said core memory, comprising the steps of: (a) selecting a predetermined number of address locations within said core memory during on-line operation for testing, said predetermined address locations being interlaced with other address locations currently being used for the normal storage of data; (b) writing each one of a group of words one-at-a-time into said selected address locations, each of said written words including data bits corresponding to the address bits of a selected location into which said words are written, by combining the selection of predetermined ones of said digit drivers, digit switches, word drivers and word switches in a fashion such that each one of said digit drivers is tested with each one of said digit switches and each one of said word drivers is tested with each one of said word switches; (c) subsequently reading each of said written words from said core memory; (d) comparing the address of each of said selected locations with said words as they are read from said core memory to determine whether the words and the addresses are the same; (e) whereby all of said electronic control elements can be tested and the operation thereof verified by writing a group of words which is less in number than the capacity of the core memory.

3,863,228

APPARATUS FOR DETECTING AND ELMINATING A TRANSFER OF NOISE RECORDS TO A DATA PROCESSING APPARATUS

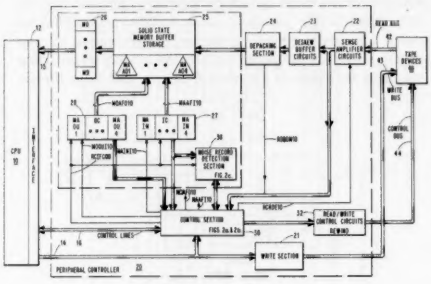
Donald R. Taylor, Framingham, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 13, 1973, Ser. No. 424,527
Int. Cl. G06f *3/06*
U.S. Cl. 340—172.5 **25 Claims**

1. Apparatus for detecting and eliminating a transfer of noise records to a data processing system received from a data source as units of information, said apparatus being coupled to said data source and to said system, said apparatus comprising:

buffer memory means having a plurality of addressable storage locations, said buffer memory means coupled to receive signals representative of units of information from said source and transfer only signals corresponding to units of information to said system;

addressing means coupled to said buffer memory means, said addressing means being operative to condition said buffer memory means to select an initial storage location and successive locations within said buffer memory means for storing units of information when received from said data source;



noise detection means coupled to said addressing means, said detection means in response to signals accumulated from said data source indicating that a minimum number of said units of information corresponds to a predetermined minimum number has been stored in said buffer memory means being operative to generate a signal for conditioning said addressing means so as to enable read out of said units of information; and,

control means coupled to said noise detection means and to said addressing means, said control means being conditioned by said noise detection means in the absence of receiving signals from said data source for a predetermined period of time to force said addressing means to condition said buffer memory means to select again said initial storage location for storage of new signals subsequently received from said source.

3,863,229

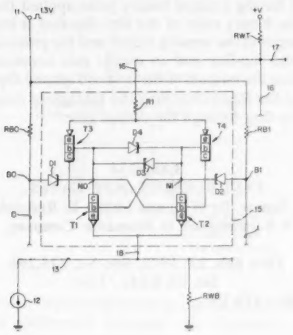
SCR (OR SCS) MEMORY ARRAY WITH INTERNAL AND EXTERNAL LOAD RESISTORS

John Edwin Gersbach, Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 25, 1973, Ser. No. 373,047
Int. Cl. G11c *11/40, 5/00*
U.S. Cl. 340—173 FF **8 Claims**

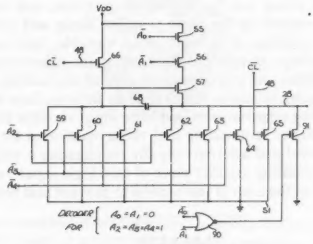
1. A memory cell organization including an array of integrated circuit memory cells arranged in rows and columns, each cell comprising a pair of cross-coupled silicon controlled rectifiers to form a bistable data storage cell, each cell including a load terminal, a pair of gating terminals and a common node terminal; at least a pair of bit select lines associated with each column of cells and a word line associated with each row of cells; gating means intermediate each gating terminal of each cell and a bit line of each cell of a column; said word line being connected to said common node terminal of each cell of a row; a source of power having at least two terminals and impedance means connected to one of said terminals external of said integrated circuit cells at said load terminal, and conductive means connecting a plurality of said cells to said impedance means to thereby provide a source of voltage for said cells, and including second impedance means in each cell

connected to said load terminal to inhibit negative resistance effects when applying a pulse to said bit select lines and a



pulse to said word line, and means connecting the common node terminals to said second terminal.

3,863,230
MOS MEMORY DECODER CIRCUIT
William M. Regitz, Cupertino, and John A. Reed, Los Altos, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.
Filed July 18, 1973, Ser. No. 380,350
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 R **2 Claims**



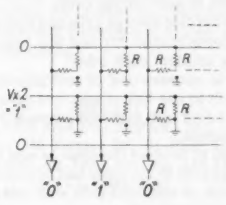
1. In a decoder for a memory which produces an output signal upon recognition of a predetermined address with a decoder circuit which includes at least two transistors in parallel which receive a portion of said address, and at least two transistors in series which receive the remainder of said address, a circuit for preventing said output signal from being produced without receipt by said decoder of said predetermined address, due to electrical charge being stored on said transistors in series comprising:

logic circuit means for recognizing a predetermined electrical condition including terminals for receiving said remainder of said address; and,

disenabling means for preventing the production of said output signal coupled to said logic circuit means;

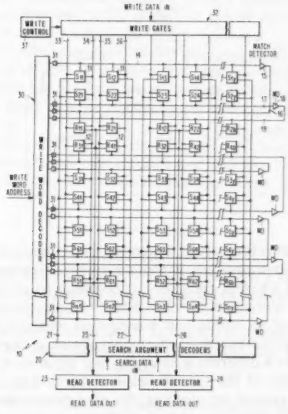
whereby upon recognition by said logic circuit means of said predetermined electrical condition said decoder is prevented from producing said output signal.

3,863,231
READ ONLY MEMORY WITH ANNULAR FUSE LINKS
Wilfred Kenelm Taylor, Richmond, England, assignor to National Research Development Corporation, London, England
Filed July 23, 1973, Ser. No. 381,701
Int. Cl. G11c *17/00*
U.S. Cl. 340—173 SP **9 Claims**



1. A memory device comprising insulating material supporting a plurality of first conductors, a plurality of second conductors and a plurality of electrical resistor links each providing an ohmic connection between a first conductor and a second conductor, each link comprising a film of electrically conductive material deposited on said insulating material and having dimensions and electrical resistance such that application of a voltage of a predetermined magnitude between a first conductor and a second conductor causes fusing of the corresponding link over an annular area of said film surrounding said first conductor but application of a voltage of half said predetermined magnitude does not cause fusing of said link.

3,863,232
ASSOCIATIVE ARRAY
Darrel D. Johnson, Fishkill; Carl L. Kaufman, Wappingers Falls; Fred H. Lohrey, Poughkeepsie, and Gordon J. Robbins, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 26, 1973, Ser. No. 428,300
Int. Cl. G11c *15/00*
U.S. Cl. 340—173 AM **21 Claims**



1. An associative array including:

a plurality of memory cells arranged in rows and columns; some of said rows of said memory cells forming rows of storage cells with said storage cells of each row being a word;

the remainder of said rows of said cells forming rows of read cells, the number of said rows of said read cells being one-half the number of said rows of said storage cells;

each of said storage cells being formed by said memory cells in two adjacent columns;

each of said read cells being formed by one of said memory cells;

each of said rows of said read cells providing outputs for two of said rows of said storage cells;

said two rows of said storage cells and said row of said read cells providing outputs for said two rows of said storage cells being adjacent each other;

first means to connect one of said adjacent rows of said storage cells to one-half of said read cells in said adjacent row of said read cells with said connected read cells being in odd columns;

second means to connect the other of said adjacent rows of said storage cells to the other half of said read calls in said adjacent row of said read cells with said connected read cells being in even columns;

said storage cells of said one adjacent row transmitting a signal through said first connecting means to said connected read cells when an address to all of said rows of said storage cells selects the word of said one adjacent row to cause said connected read cells to provide an output;

and said storage cells of said other adjacent row transmitting a signal through said second connecting means to said connected read cells when an address to all of said rows of said storage cells selects the word of said other adjacent row to cause said connected read cells to provide an output.

3,863,233

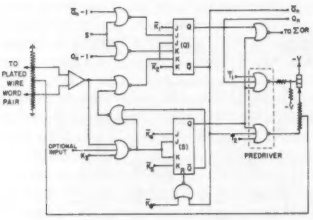
MAGNETIC MEMORY ARRAY

Everett E. Eddey, Akron; James N. Favor, Mogadore, and Willard C. Meilander, Kent, all of Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Continuation of Ser. No. 1,495, Dec. 29, 1969, abandoned. This application Mar. 23, 1973, Ser. No. 344,316

Int. Cl. G11c *11/04, 11/14*

U.S. Cl. 340—174 PW **10 Claims**



1. Apparatus for storing, accessing, and processing a plurality of data simultaneously within a memory array having a first set of wires wherein each wire is common to all bits of one word and a second set of wires wherein each wire is common to one bit of all words and having first and second sets of current drivers wherein each current driver of the first set is connected to a different wire of the first set of wires and each current driver of the second set is connected to a different wire of the second set of wires, the wire drivers being operative to access data storage bits of the array, comprising:

a plurality of identical circuit means connected to the array, one such circuit means connected to each of the wires of the first set of wires for retrieving data therefrom and performing upon such data all sixteen of the logic and arithmetic functions possible between two bits of data, said circuit means including:

sensing means, one connected to each of the wires to the first set of wires, for sensing data of the bits of the associated word;

a gating means connected to the sensing means and having a first flip-flop receiving the outputs thereof, the gating means having a timed binary pulse applied thereto such that the binary state of the first flip-flop is indicative of the output of the sensing means and the pulse timing; and a second flip-flop and an output gate connected to and receiving the outputs of the first and second flip-flops, the second flip-flop controlling the passage of data from the first flip-flop through the output gate.

3,863,234

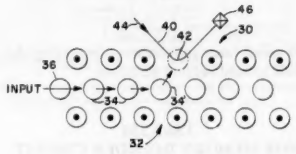
FAST BUBBLE LOGIC GATES

Warren L. Semon, De Witt, and Luther D. Rudolph, Manlius, both of N.Y., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 23, 1973, Ser. No. 335,296

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF **16 Claims**



1. A bubble logic circuit, comprising means for maintaining a plurality of adjacent magnetic bubbles in a string such that a magnetic impulse at one end is transferred through the string by means of a bubble-bubble chain reaction, means for generating said magnetic impulse at said one end of said string of bubbles, means for receiving a bubble ejected from the other end of said string due to said chain reaction, and control means for controlling the chain reaction along said string of bubbles in response to a logic input variable, said control means including a bubble propagation circuit adjacent to said string of bubbles and intersecting an area of interaction therewith for causing selective removal of an intermediate bubble from the string responsive to said logic input variable being in one state thereby terminating said chain reaction at the point of said removal and alternatively for propagating a magnetic bubble representing another state of said logic input variable into and out of the area of interaction to prevent said removal.

3,863,235

PHASE SENSITIVE POSITION PICKOFF DEVICE

Donald Eugene McKee, Placentia, and James Edward Rau, Anaheim, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 20, 1973, Ser. No. 333,572

Int. Cl. G08c *19/16*

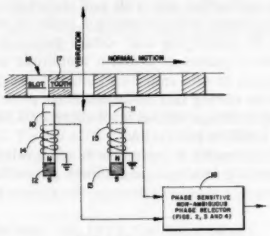
U.S. Cl. 340—195 **10 Claims**

1. In a motion detector of the type having two permanent magnet polarized induction sensors responsive to and adjacent a movable armature of periodically-spaced armature elements and mutually spaced apart in a direction parallel to a preselected motion of said armature element by an amount substantially equal to a half of such periodic spacing plus an integer number of such spatial interval, logic means for indicating the time of coincidence of the position of a movable armature element and a reference position during preselected motion thereof, and comprising

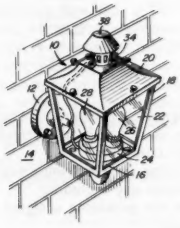
state set detection means responsive to the time phases of that voltage generated in each of said sensors to provide a two-state output the duration of a preselected state of

which being indicative of a preselected set of concomitant states of the senses of those voltages generated in said sensors; and

gating means responsive to a preselected induced polarity state of a preselected one of said sensors and having a gate control input responsive to a preselected sense of the interval difference between the duration and non-duration of said preselected set of concomitant states for providing a gated output signal corresponding to said time of coincidence.



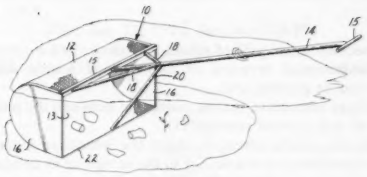
3,863,236
WALL MOUNTED SELECTIVELY CONTROLLED ALARM
Lewis L. Clardy, P.O. Box 3337, Montgomery, Ala. 36109
Filed Oct. 31, 1972, Ser. No. 302,499The portion of the term of this patent subsequent to Aug. 10, 1988, has been disclaimed.
Int. Cl. G08b *23/00*
U.S. Cl. 340—326 **3 Claims**



1. As an article of manufacture, a device for mounting on an exterior wall of a building structure, consisting of:

a combined illumination and emergency signalling device comprising an enclosure mountable upon said exterior wall, providing a generally closed top, bottom, and four corner portions, all of sheet metal, said top wall further forming a weather cap to protect the enclosure from the elements, at least three of the four corners of the enclosure having translucent material therebetween, the fourth open, or unfilled, portion being adjacent the exterior wall for connection to switching means on an interior wall of the building structure, the interior portion of the enclosure further including first and second selectively energizable, and differentially colored electric lamps mounted within said enclosure for providing both conventional illumination and flashing, or other intermittent, illumination respectively, said device further including a generally cylindrical member generally parallel to and vertically disposed with respect to the exterior wall of the building structure, said cylindrical member including a plurality of circumferentially spaced apertures defining air and sound passageways, an electric siren supported in said cylindrical member with inlet and outlet ports generally aligned with said air passageways, and circuit control means located interiorly of the building structure for selective energization of said second lamp and said siren for summoning outside aid in the event of an emergency, or energization of said first lamp only for illumination of the area adjacent said enclosure, laterally extending bracket means attachable to the exterior wall of the building structure, wiring for connecting the lamps and siren within the enclosure, through said bracket means, to said circuit control means.

3,863,237
LAKE RAKING APPARATUS
Norman N. Doerr, 746 Terrace Dr., St. Paul, Minn. 55113
Filed Dec. 10, 1973, Ser. No. 423,238
Int. Cl. E04h *3/20*
U.S. Cl. 15—1.7 **3 Claims**



1. A lake rake apparatus for removing debris and weeds from the bottom of lakes and the like comprising:

a rigid, perforated, foraminious receptacle suitable for retaining debris and weeds from said lake bottom, said receptacle having one open side;

a handle attached at one point to said receptacle, said handle being attached to one edge of said receptacle at an angle of about 150°–180°;

an elongated rigid cutting edge attached to an edge of said receptacle opposite said handle said cutting edge being adapted for movement along said like bottom;

a brace having one end attached to said handle and the other end attached to the same side of said receptacle as said rigid cutting edge; and

at least one brace having one end attached to said handle and the other end attached to said container on the same side as said handle, said braces serving to keep said handle in a fixed angular configuration with respect to said receptacle;

whereby when said rake is moved along said lake bottom, water and sand will pass through said foramina but weeds, stones and other debris will be retained within the receptacle.

3,863,238
DUAL GROUND INTEGRITY MONITORING CIRCUIT
William G. Rowell, Canton, Mass., assignor to Honeywell Inc., Minneapolis, Minn.
Division of Ser. No. 865,457, Oct. 10, 1969, Pat. No. 3,611,053. This application Sept. 3, 1971, Ser. No. 177,794
Int. Cl. G08b *21/00*
U.S. Cl. 340—255 **1 Claim**

1. A circuit for monitoring a sensor located in a hazardous region and for monitoring the integrity of both line voltage ground and remote ground comprising:

conductors extending from the sensor to a non-hazardous region;

a source of line voltage in the non-hazardous region;

a first voltage step-down transformer having its primary connected to the voltage source;

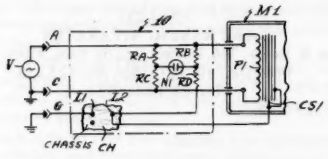
indicating means responsive to the sensor and located in the non-hazardous region;

a second voltage step-down transformer having its primary connected to said indicating means;

the secondaries of said first and second transformers being connected in series with each other and in series with the sensor through said conductors;

a ground associated with said source of line voltage and a remote ground,

a first series pair of resistances connected across said voltage source;



a second series pair of resistances connected between the ungrounded terminal of said voltage source and said remote ground; and

voltage responsive means connected between the junctions of said pairs of resistances;

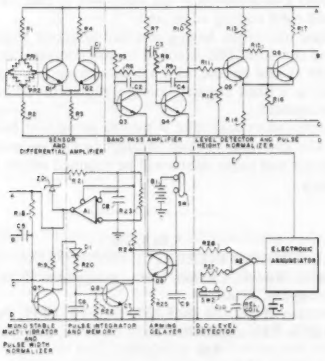
whereby faults arising in either the indicating means, the transformer primaries, or in the sensor or its conductors, present a substantially reduced energy discharge in the hazardous region and said pairs of resistance being valued such that loss of either ground will cause said voltage responsive device to indicate the loss.

3,863,239

APPARATUS FOR DETECTING MOTION IN A GIVEN FIELD OF VIEW, FOR SOUNDING AN ALARM WHEN SAID MOTION EXCEEDS A PREDETERMINED EXTENT

James P. Campman, 12900 Broadmoor Rd., Silver Spring, Md. 20900

Filed Feb. 27, 1974, Ser. No. 446,411
Int. Cl. G08b *13/18*
U.S. Cl. 340—258 R **5 Claims**



1. An intrusion detecting apparatus responsive to motion in a predetermined area comprising:

a cylindrical concave reflecting type lens means directed towards said predetermined area for producing a duality of band-shaped images of each stationary object within said area and a duality of images of each movable object in said area, which images are movable at different speeds and in opposite directions with respect to each other and into and out of coincidence with each other and the images of said stationary objects as the movable objects traverse said area;

photosensitive means for receiving said images of objects in said area and responsive to the changing conditions caused by the images moving into and out of coincidence with each other and with said stationary images to produce a signal voltage having a series of voltage pulses;

means for amplifying said voltage pulses and generating a series of pulses of uniform amplitude and duration in response to said amplified voltage pulses;

means for storing said uniform voltage pulses and for generating a voltage whose level represents the frequency of said uniform pulses; and

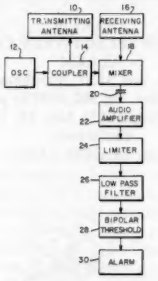
means responsive to a predetermined level of voltage in said means for storing said uniform pulses for sounding an alarm.

3,863,240

ELECTROMAGNETIC INTRUSION DETECTION SYSTEM

Aaron A. Galvin, Lexington, Mass., assignor to Aerospace Research, Inc., Boston, Mass.

Filed Dec. 8, 1972, Ser. No. 313,613
Int. Cl. G08b *13/18*
U.S. Cl. 340—258 C **8 Claims**



1. An electromagnetic intrusion alarm system for detection of an intruder in a surveillance zone irrespective of intruder motion, said system comprising:

means for providing an electromagnetic field in a zone under surveillance and including:

oscillator means for providing a signal of predetermined fixed frequency;

transmitting antenna means for providing said electromagnetic field in response to said oscillator signal; and

coupler means for conveying said oscillator signal to said antenna means and for providing a local oscillator signal;

receiving antenna means for receiving electromagnetic energy returned from said zone;

mixer means operative in response to the output signal from said receiving antenna means and to said local oscillator signal to provide a signal of substantially constant output level under static conditions in which no intruder is present within said zone, and of a different average output level in the presence of net amplitude and/or phase changes in received energy caused by intruder presence within said zone;

means for establishing a reference threshold in accordance with the static positional characteristics of said zone and objects therein and of a level greater than said average output level of said mixer means;

means having a bandwidth substantially less than the bandwidth necessary for processing Doppler signals and operative in response to said signal of substantially constant output level to provide an output signal having an amplitude less than said threshold level, and operative in response to said signal of different average output level to

provide an output signal having an amplitude greater than said threshold level and which is representative of the net change in the amplitude and/or phase of said received energy to thereby represent irrespective of intruder motion the net change in the positional characteristics of said zone and objects therein; and

means for providing an alarm indication of intruder presence only upon exceedance by said output signal of said reference threshold.

3,863,241

YARN BREAK DETECTOR UTILIZING A SENSOR FOR SENSING THE YARN STATIC ELECTRICITY

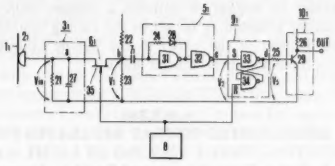
Masaru Kamiyamaguchi, Yokohaam; Kazuyoshi Nakagawa, Tokyo, and Masana Nishimura, Kawasaki, all of Japan, assignors to Yamatake-Honeywell Company Limited, Tokyo, Japan

Filed Mar. 26, 1973, Ser. No. 344,661

Claims priority, application Japan, Mar. 25, 1972, 47-29955

Int. Cl. D04b *35/16;* **B65h** *63/00*

U.S. Cl. 340—259 **3 Claims**



1. A yarn break detector of the sampling type comprising; a collecting electrode type sensor to which a continuously moving yarn is lightly contacted, a DC to pulse converter including a current to voltage converter connected to the sensor so as to convert the current resulting from the collection of the static electricity by the sensor to a voltage and a sampling switch connected to the current to voltage converter so that the DC to pulse converter produces an output pulse signal on its output terminal when said sampling switch is closed, a check pulse generator for closing said sampling switch, and a signal handling circuit for processing said output pulse signal so as to operate a load if the yarn being monitored has broken.

3,863,242

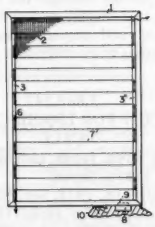
ELECTRIC SCREEN PROTECTION

James W. Minton, 5125 Whitsett Ave., North Hollywood, Calif. 91607

Filed Dec. 7, 1972, Ser. No. 313,001

Int. Cl. G08b *13/00*

U.S. Cl. 340—273 **1 Claim**



1. In a normally closed protective circuit having alarm means responsive to opening said circuit, the combination comprising;

a. a substantially planar screen frame (**1**) having a mesh screen (**2**) with wires,

b. separate strip-like projection-carrying means (**3** or **3'**) peripherally attached to said screen frame and having a plurality of spaced sharp projections (**6**), few with respect to the number of said wires, and

c. a single electrical conductor (**7**) included in said circuit, threaded totally across but separate from said mesh screen between said projections, lying in a plane parallel to that of said mesh screen, and electrically insulated therefrom,

whereby physical displacement of said conductor causes it to be severed by at least one of said sharp projections.

3,863,243

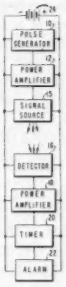
SLEEP INHIBITING ALARM

Max Skolnick, Elmont, Long Island, N.Y., and William Steckowich, Rutherford, N.J., assignors to Max Skolnick, Elmont, L.I., N.Y.

Filed Jan. 19, 1972, Ser. No. 218,991

Int. Cl. G08b *21/00*

U.S. Cl. 340—279 **8 Claims**



1. An apparatus for detecting eye closure of an individual comprising:

a signal source for generating and transmitting a signal into the individual's eye;

a power source for energizing said signal source;

means for detecting the difference in reflected signal intensity between the signal reflected by the opened eye of the individual and the higher signal intensity reflected by the eyelid of the individual when the eye is closed, comprising a photosensitive signal generator;

said signal source comprising a pulse generator to generate a signal; an amplifier to amplify said signal and a light energized by said signal;

said pulse generator comprising means for generating a sawtooth pulse at a desired frequency;

means for varying the width of the generated pulse and means for compensating said generating means so as to eliminate the dependency of frequency upon said pulse width varying means;

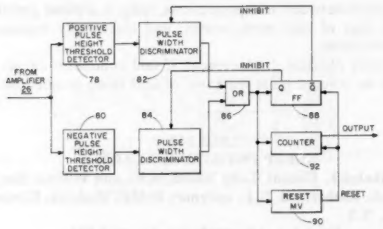
said generating means comprising a unijunction transistor and a capacitor, said capacitor being connected between the emitter of said transistor and the negative lead of said power source such that upon charging to the activation voltage of said transistor said transistor is activated to discharge said capacitor, and means for varying the charging time of said capacitor;

an alarm activated by said reflected higher intensity signal.

3,863,244
ELECTRONIC SECURITY SYSTEM HAVING IMPROVED NOISE DISCRIMINATION

George Jay Lichtblau, Suite E, 12-D 425 E. 63rd St., New York, N.Y. 10021

Filed June 14, 1972, Ser. No. 262,465
Int. Cl. G08b *13/00, 21/00*
U.S. Cl. 340—280 24 Claims



1. An electronic security system comprising:

transmitter means for providing an electromagnetic field in a predetermined area at a frequency repetitively swept through a predetermined range;

a multi-resonant tag circuit having a first resonant frequency within said predetermined range of frequencies and a second frequency outside of said predetermined range of frequencies;

receiver means for detecting the presence of said first resonant frequency from a tag circuit present in said predetermined area;

said receiver means including

detector means operative to provide output pulses in response to the presence of the first resonant frequency of said tag circuit in said electromagnetic field;

means for discriminating between relatively steep pulses from said detector means caused by the presence of a tag circuit in said electromagnetic field and less steep pulses caused by noise;

noise rejection circuitry operative in response to pulses from said discriminating means for providing output signals and including means operative in response to pulses from said discriminating means of first and second polarity to provide respective first and second pulses of predetermined pulse height and pulse width; means for providing third pulses in response to said first and second pulses of alternating polarity;

means defining a time interval in which said third pulses must be received in order to provide an output indication; means operative in response to said third pulses to provide an output indication of alarm actuation in response to a predetermined number of received pulses.

3,863,245
INTERCOMMUNICATION NETWORK FOR RETAIL CHECK OUT COUNTERS

Roy V. Swinamer, 22 Cercuit Dr., Binghamton, N.Y. 13903, and C. Carroll Larkin, 1 Benita Blvd., Vestal, N.Y. 13850

Filed June 21, 1973, Ser. No. 371,991
Int. Cl. H04q *5/00*
U.S. Cl. 340—286 5 Claims

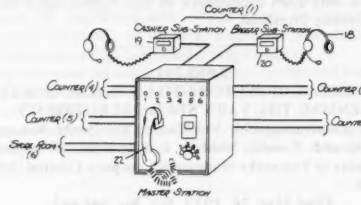
1. A supermarket system for expediting transactions, such system comprising:

A. a group of identical check-out counters each serviced by a cashier and a bagger whose duties are performed at a cashier substation and a bagger substation;

B. a control box at each substation and a headset wired thereto, said box including a call button;

C. a manager's booth; and

D. a master station installed in said booth and having an annunciator provided with indicators, one for each counter, a multi-position selector switch, one position for each counter, and a telephone set wired to said master station, said master station being connected to the control

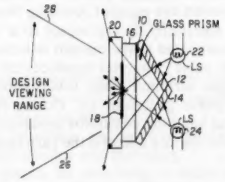


boxes at said counters whereby the cashier and bagger at each counter are linked to each other through the master station, and when a call button is pressed by either the cashier or bagger to activate a related indicator, the selector switch may be set to the calling counter to link the headset of the caller at the calling counter to the telephone set at the master station.

3,863,246
BACKLIGHTED DISPLAY APPARATUS FOR PREVENTING DIRECT VIEWING OF LIGHT SOURCES

James S. Trcka, Cedar Rapids, and David C. Yeoman, Toddville, both of Iowa, assignors to Collins Radio Company, Dallas, Tex.

Filed July 9, 1973, Ser. No. 377,487
Int. Cl. G09f *9/32*
U.S. Cl. 340—324 R 9 Claims



1. A device for use in backlighting a display comprising, in combination:

prism means having two minor surfaces and one major surface;

louvered material attached to said two minor surfaces of said prism;

display material attached to said major surface of said prism means, light passing through the louvered material and said prism to said display material being diffused by defined areas of said display material and contrasting greatly with areas of no diffusion.

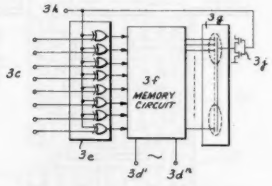
3,863,247
DRIVING CIRCUIT FOR LIQUID CRYSTAL DISPLAY CELL

Minoru Hosokawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Oct. 18, 1972, Ser. No. 298,681
Claims priority, application Japan, Oct. 18, 1971, 46-82243
Int. Cl. G02f *1/18*; G09f *9/32*
U.S. Cl. 340—336 5 Claims

1. A driving circuit for a liquid crystal display cell having a segmented electrode divided into a plurality of segments

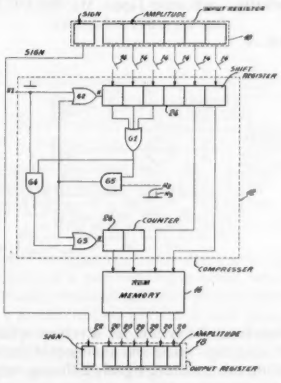
grouped in a plurality of columns and a common electrode, comprising transforming circuit means for transforming input data signals into data signals alternating with a uniform period in response to an alternating driving signal, the data portions of said data signal alternating out of phase with said alternating driving signal; memory circuit means having a memory decoder matrix means having first and second groups of inputs, said first group of inputs being connected to said transforming circuit means for receiving said alternating data signals from said transforming circuit means, said second group of inputs being connected to receive timing signals representative respectively of each of said plurality of columns, said decoder matrix means having a plurality of outputs each connected with one of said liquid crystal display cell segmented electrode segments for applying an alternating output signal to selected ones of said segments; and means for applying said alternating driving signal to said common electrode.



3,863,248
DIGITAL COMPRESSOR-EXPANDER

Pierre A. Deschenes, Sherbrooke; Hubert Stephenne, Rock Forest, and Michel Villeret, Sherbrooke, Quebec, all of Canada, assignors to Universite de Sherbrooke, Sherbrooke, Quebec, Canada

Filed Jan. 2, 1973, Ser. No. 320,565
Int. Cl. H03k *13/00*
U.S. Cl. 340—347 DD **18 Claims**



1. A compressor for converting m digit coded signals into *n* digit coded signals wherein $n < m$, according to a desired input-output continuous characteristic, comprising:

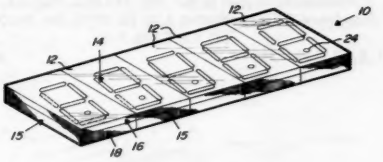
a. first means for converting said m digit coded signals into *p* digit coded signals, $p < m$, so that when the corresponding analog values *x* of said *m* digit coded signals are plotted on the X axis and the corresponding analog values *y* of said *p* digit coded signals plotted on the Y axis of a Cartesian coordinate system, they produce an input-output discontinuous characteristic composed of a plurality of successive straight line segments of different slopes; and

b. second means connected to said first means for converting said *p* digit coded signals into said n digit coded signals according to the desired input-output continuous characteristic.

3,863,249
MAGNETIC FLUID DISPLAY DEVICE

Emery E. Olah, Schaumburg, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed July 30, 1973, Ser. No. 383,938
Int. Cl. G08b *5/00*
U.S. Cl. 340—373 **13 Claims**

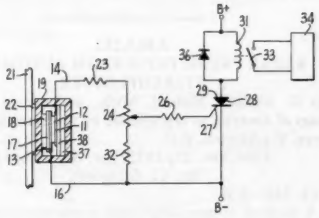


1. A fluid display device including a housing having means defining a pair of cavities therein, means defining a channel connecting said cavities for communication therebetween, an opaque fluid having a predetermined surface tension characteristic provided in one of said cavities, a clear fluid provided in the other one of said cavities, said opaque fluid including magnetic particles suspended therein and said clear fluid being immiscible, and magnetic field producing means mounted adjacent said housing for providing a magnetic field of a predetermined strength to cause said magnetic fluid and clear fluid to be moved through said channel into the other of said cavities, respectively, said channel having a predeterminedly sized opening such that said opaque magnetic fluid having said predetermined surface tension characteristic remains in the cavity into which it has been moved despite the removal of the predetermined magnetic field by said magnetic field producing means and the position of said housing.

3,863,250
GLASS BREAKAGE DETECTOR

Arthur McCluskey, Jr., 41187 Alline St., Fremont, Calif. 94538

Filed Jan. 30, 1973, Ser. No. 328,096
Int. Cl. G08b *13/02, 13/04*
U.S. Cl. 340—274 **5 Claims**



1. In an alarm for sensing vibrations in a sheet of glass capable of breaking the glass, a vibration sensor comprising

a piezoelectric element responsive to vibrations to generate an output signal,

means for mounting said sensor directly on and adhered to the sheet of glass,

mechanical filtration means interposed between said piezoelectric element and the sheet of glass for blocking from said piezoelectric element vibrations of a frequency and magnitude incapable of breaking the glass,

and electrical circuit means coupled to said piezoelectric element for generating an alarm signal in response to an output signal from said piezoelectric element,

said electrical circuit means being responsive to said output signal only when the latter reaches a voltage corresponding to mechanical vibration of the sheet of glass of a frequency and magnitude capable of breaking the glass.

3,863,251

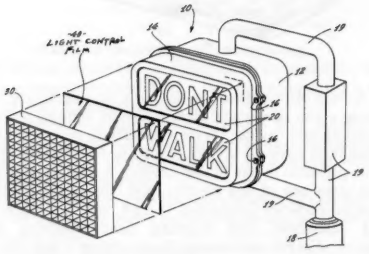
LIGHT SCREEN FOR PEDESTRIAN TRAFFIC SIGNAL

James S. Gould, 11682 Pine St., Los Angeles, Calif. 90720, and Samuel Gould, 5504 Garth Ave., Los Angeles, Calif. 90056

Continuation-in-part of Ser. No. 253,002, May 15, 1972, abandoned. This application Apr. 20, 1973, Ser. No. 352,937

Int. Cl. G08b *5/00*

U.S. Cl. 340—382 **4 Claims**



1. In combination with a pedestrian traffic signal of the type having legends selectively illuminated by light sources within the signal and a vertically disposed face plate on which the legends appear, a light screen mounted on the signal in front of the face plate for shielding the legends from ambient light and for blanking out the legends when the light sources within the signal are not illuminated, said light screen comprising a grating composed of a multiplicity of intersecting webs forming a plurality of rectangular apertures therein and through which the aforesaid legends are exposed when illuminated by the light sources within the signal, said webs being in the form of rectangular strips, a first plurality of said strips being positioned horizontally in spaced and parallel relationship, and a second plurality of said strips being positioned vertically in spaced and parallel relationship perpendicular to the strips of said first plurality.

3,863,252

RADAR PREDICTIONS FROM AUTOMATED STEREOPLOTTER

James O. Abshier, Milford, Mich., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 27, 1973, Ser. No. 419,461

Int. Cl. G01s *9/02*

U.S. Cl. 343—5 R **5 Claims**

1. A method of providing radar predictions from an automated analytical stereoplotter comprising the steps of:

defining the boundaries of the region to be plotted,

storing the boundary limits and stereo photographic information in the stereoplotter,

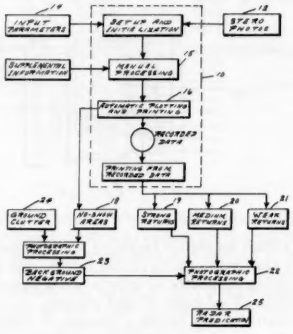
manually delineating the area type and linear type planimetry, and assigning intensity codes to each planimetric feature,

locating point tartets, and assigning intensity codes to each point target,

storing the locations and intensity codes for the point targets, area and linear planimetry on magnetic tape,

plotting terrain model in the circular profiling mode,

analyzing the terrain slope to determine expected return intensity.



printing a no-show negative.

printing intensity code negative, and

photographically processing said no-show negative with said intensity code negatives to produce a final radar prediction.

3,863,253

MULTIPLE FREQUENCY DOPPLER RADAR SYSTEM FOR VEHICLE PASSENGERS

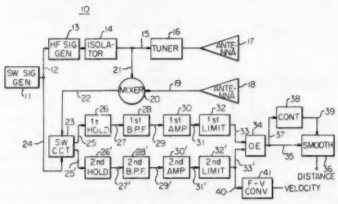
Masami Kiyoto, and Makoto Anzai, both of Yokosuka City, Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Filed May 25, 1973, Ser. No. 363,792

Claims priority, application Japan, May 26, 1972, 47-52346

Int. Cl. G01s *9/24, 9/44*

U.S. Cl. 343—9 **6 Claims**



1. In a doppler radar system for a vehicle which detects a distance between the vehicle and an object in the vehicle path by transmitting two separate signals differing only slightly in frequency, the improvement comprises:

first means for converting each of the doppler signals corresponding to the transmitted separate two signals into a pulse signal consisting of pulses appearing during alternative half waves of said each of the doppler signals;

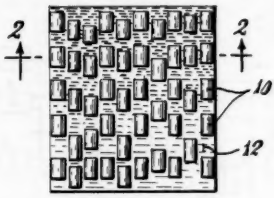
second means for producing a pulse train consisting of a plurality of pulses each appearing at a time period when either one of the two pulse signals appears; and

third means for averaging said pulse train so as to produce a distance signal representing the distance between the vehicle and the object.

3,863,254
SYSTEM FOR THE DELAYED DISPERSAL OF CHAFF IN OUTER SPACE

James W. Turner, Bay Village, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 11, 1969, Ser. No. 808,037
Int. Cl. G01s *7/42*; **H04k** *3/00*
U.S. Cl. 343—18 B **3 Claims**

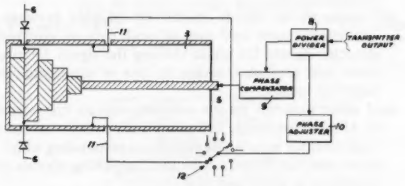


1. A method for dispersing radar reflecting material into the upper atmosphere to simulate attacking bodies which comprise ejecting from a rocket vehicle during its re-entry regime, a package of dipole conductors bound together by a highly volatile binder material wherein said binder material is selected from the group consisting of paradichlorobenzene, ammonium chloride, succinimide, phthalimide, and phthalic anhydride, and subjecting said package to the thermal shock conditions occurring during the re-entry regime whereby said binder evaporates and permits the dispersion of said dipole conductors into the atmosphere.

3,863,255
NONROTATING TACAN ANTENNA

Floyd William Iden, Pompton Plains, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Continuation of Ser. No. 152,132, June 11, 1971, abandoned. This application July 25, 1973, Ser. No. 382,406
Int. Cl. G01s *1/46*
U.S. Cl. 343—106 R **4 Claims**



1. A method of modulating a transmitter carrier signal in the distribution cavity of a non-rotating antenna, which antenna produces a rotating cardioid radiation pattern comprising:

extracting a predetermined portion of said transmitter carrier signal prior to the input of said distribution cavity;

adjusting the phase of said extracted signal;

injecting said phase adjusted signal sequentially to a plurality of pairs of probes projecting into the distribution cavity to excite the H_{11} coaxial mode of propagation in the cavity, each probe of each pair being diametrically opposed and said excitation on each probe of each pair is in phase opposition;

delaying the remainder of said carrier signal by an integral number of wavelengths to produce a desired phase relationship between said carrier signal and said H_{11} mode;

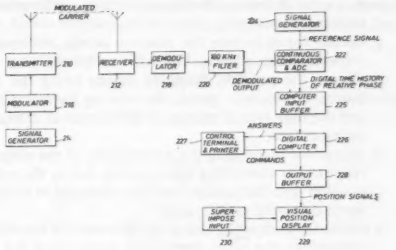
feeding said delayed carrier signal to the center conductor of an RF impedance transformer located within said distribution cavity; and

extracting signals having the desired amplitude and phase modulation from the outputs of said transformer.

3,863,256
METHOD AND APPARATUS FOR DEVELOPING RELATIVE DIRECTION AND DISTANCE DATA

Spurgeon E. Smith, Austin, Tex., assignor to Tracor, Inc., Austin, Tex.

Continuation-in-part of Ser. No. 269,442, July 6, 1972, abandoned. This application Nov. 8, 1972, Ser. No. 304,855
Int. Cl. G01s *5/04*
U.S. Cl. 343—112 R **28 Claims**



1. A method for locating a source with respect to a moving vehicle, one of said source and vehicle transmitting a stable frequency signal, which method comprises, at the other of said source and moving vehicle, the steps of:

receiving the transmitted stable frequency signal,

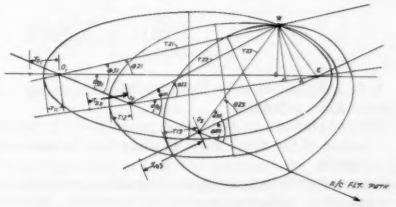
continuously comparing the phase difference between said received signal and a standard signal having approximately the same frequency as said received signal to develop a time history of the relative distance traveled by the one of said source and vehicle with respect to the other, and

ascertaining from assumed approximate initial range and direction of one of said source and vehicle with respect to the other and from said time history of relative distance traveled by computational procedure the relative direction and distance of said source with respect to said vehicle.

3,863,257
PASSIVE RANGING BY TIME DIFFERENCE MULTI-PATH

George S. Kang, Silver Spring, Md., and Allan E. Berry, Thousand Oaks, Calif., assignors to The United States of America as represented by the Secretary of the United States Air Force, Washington, D.C.

Filed June 27, 1972, Ser. No. 268,225
Int. Cl. G01s *5/02*, *5/12*
U.S. Cl. 343—112 D **2 Claims**



1. A system for determining range by a moving observer of an electromagnetic emitter of successive signals derived from a geometric configuration that defines an ellipse where the

emitter is at one focus and the observer is at the other focus, comprising:

a. a reflector;

b. means for measuring the time differences of arrival between successive direct emitter signals and reflected signals from the reflector;

c. means for determining the rate of change of time differences of arrival, said means being fed by the time difference measuring means;

d. means for detecting the distance from the observer to the vortex of the ellipse behind the observer defining one focus of the ellipse, the distance detecting means being fed by the time difference measuring means;

e. a source of observer speed;

f. means for detecting the bearing of the emitter relative to the observer;

g. means for detecting the position of the reflector with respect to the observer with the reflector lying on the ellipse, the position detecting means being fed by the source of observer speed, the bearing detecting means, and the time rate of change of differences of arrival measuring means;

h. means for computing the eccentricity of the ellipse, the eccentricity computing means being fed by the reflector position detecting means and the observer to vortex distance detecting means; and

i. means for computing the range between the observer and the emitter, the range computing means being fed by the eccentricity computing means and the time difference of arrival measurement means.

3,863,258

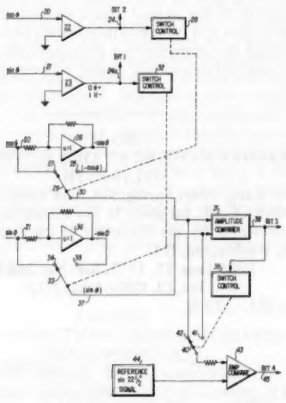
BINARY BEAM SYSTEM

William H. Clark, College Park, Md., assignor to Litton Systems, Inc., College Park, Md.

Continuation of Ser. No. 180,359, Sept. 14, 1971, abandoned. This application June 28, 1973, Ser. No. 374,366

Int. Cl. G01s 3/46

U.S. Cl. 343—113 R **7 Claims**



6. In a digital direction finding system employing a pair of spaced apart antennas,

means deriving a pair of signals proportional to the sine and cosine of the phase angle displacement between antenna signals,

logic means for processing said signals to produce a miltidigit code including means for comparing the absolute amplitudes of the sine and cosine signals and responsive to the smaller of the signals to compare the smaller signal with a preset fixed amplitude reference to produce a lower order digit of the code.

3,863,259

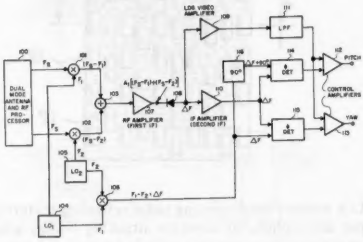
HYBRID PHASE/AMPLITUDE MONOPULSE DIRECTION-FINDING RECEIVER

Thomas R. Boughnou, Richardson; Kenneth G. Buss, Dallas, both of Tex., and Charles E. Frey, Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 14, 1973, Ser. No. 425,002

Int. Cl. G01s 5/02

U.S. Cl. 343—113 R **5 Claims**



1. A high-speed sequential lobing direction-finding receiver comprising;

input means adapted to receive signals corresponding to the Σ mode and Δ mode from an RF processor and having a frequency F_s;

said signals having phase and amplitude content;

oscillator means having outputs F_1 and F_2 separated in frequency from each other and from F_s;

mixing means operatively receiving the signals corresponding to F_s, F_1 and F_2 and outputting signals corresponding to $F_s - F_1$ and $F_s - F_2$;

detector means operatively coupled to said mixing means and operative to output a signal corresponding in frequency to the difference ΔF between F_1 and F_2;

other detector means having inputs coupled to the output said detector means and other inputs coupled to the output of said oscillator means;

said other detector means comprising a pair of synchronous detectors; and

90° phase shifter means operatively coupled between said oscillator means and one of said pair of synchronous detector means for phase shifting the signal ΔF coupled from said oscillator means to one of said synchronous detector means;

said other detector means receiving signals corresponding to ΔF with amplitude and phase information thereon from said detector means and signals corresponding to ΔF only from said oscillator means and outputting signals corresponding to pitch and yaw.

3,863,260

PATTERN BAND FOR MULTICOLOR CIRCULAR KNITTING MACHINES

Heinz Glaunsinger, Stuttgart, and Werner Engelfried, Sindelfingen, both of Germany, assignors to C. Terrot Soehne, Stuttgart-Bad Cannstatt, Germany

Filed Feb. 5, 1969, Ser. No. 796,754

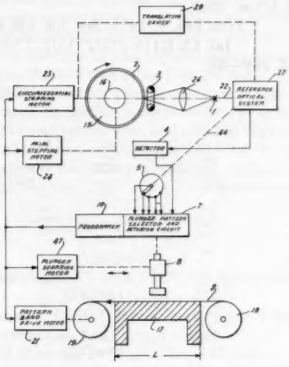
Claims priority, application Germany, Feb. 6, 1968, 1635945

Int. Cl. D04b 37/02

U.S. Cl. 346—1 **4 Claims**

1. A method of registering, on a fixed-length axial segment of a continuous, elongated pattern band suitable for controlling a circular knitting machine, a pattern of mechanical indicia (e.g., punched holes) representative of the actual distribution of at least three colors along a selected path of a multicolor pattern sample, which comprises the steps of:

cyclically scanning the selected path of the pattern sample N times in succession, where N is the number of colors; cyclically scanning the fixed segment of the pattern band N times in succesion in synchronism with the scans of the selected path of the pattern sample so that each scanned region of the fixed segment corresponds uniquely to a scanned region of the selected path;



comparing, during successive ones of the N scans in each cycle, the color distribution of the selected path with separate ones of N reference colors corresponding to the colors along the selected path; and

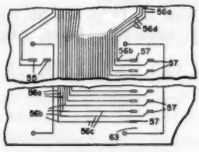
pressing, during each scan, mechanical indicia representative of the corresponding reference color on each region of the segment corresponding to a region of the selected path at which a coincidence occurs between the pattern sample and the reference color during the associated comparing step.

3,863,261

ELECTRICALLY ADDRESSED APERTURED MODULATOR FOR ELECTROSTATIC PRINTING

Enrique J. Klein, Menlo Park, Calif., assignor to Electroprint, Inc., Cupertino, Calif.

Filed May 11, 1973, Ser. No. 359,288
Int. Cl. G01d *15/06*; H05k *1/64*
U.S. Cl. 346—74 ES **31 Claims**



1. Apparatus for aperture modulated electrostatic printing, comprising:

a substrate of dielectric material;

a continuous electrode disposed on one side of said substrate;

a plurality of apertures extending through both said substrate and said continuous electrode;

a plurality of closely spaced electrical devices mounted in one or more straight and parallel rows on said substrate, each of said devices abutting one of said apertures; and

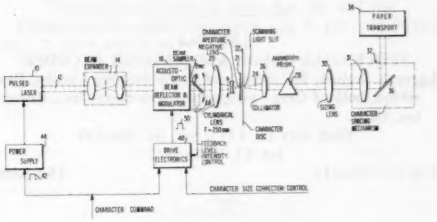
a plurality of electrically conductive continuous strips fixedly attached to the other side of said substrate, each strip having a first section attached at one end to one of said electrical devices and extending in a direction generally perpendicular to said row or rows of electrical devices, and a second section extending from said first section in a direction generally parallel to said row or rows, said second sections of said strips being more widely center spaced at all points than any of said first sections of said, each of said electrical devices comprising an electrode abutting an aperture formed in said substrate.

3,863,262

LASER PHOTOTYPESETTER

Walter A. Crofut, Tolland; Robert C. Fletcher, West Hartford; Andrew Tarasevich, West Simsbury, and Rodney J. Andersen, South Windsor, all of Conn., assignors to Datalight, Inc., Bloomfield, Conn.

Filed Mar. 21, 1973, Ser. No. 343,367
Int. Cl. B41b *21/08*
U.S. Cl. 354—5 **6 Claims**



1. In a laser phototypesetting system for imaging selected characters from a moving character carrier onto a recording medium which is stationary during character imaging periods, the improvement comprising;

a. An acousto-optical cell in the path of the laser beam; and

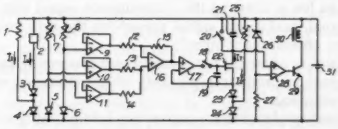
b. electronic means for applying a frequency-modulated and amplitude-modulated drive signal to said cell to simultaneously periodically deflect the beam in accordance with the modulation frequency to scan portions of a selected character sequentially and intensity modulate the beam in accordance with the amplitude modulation to regulate the uniformity of the intensity of the beam.

3,863,263

SYSTEM FOR RECEIVING EXPOSURE INACCURACIES IN AUTOMATIC CAMERAS

Takuo Itagaki, Wako, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed July 5, 1973, Ser. No. 376,829
Claims priority, application Japan, July 10, 1972, 47-81370
Int. Cl. G03b *7/08*, *9/62*
U.S. Cl. 354—24 **9 Claims**



1. In an electrical system for automatically determining exposure time in a camera, signal-generating circuit means for generating signals from which exposure time can be determined, calculating circuit means electrically connected with said signal-generating circuit means for receiving the signals generated thereby and for calculating a timing signal there-

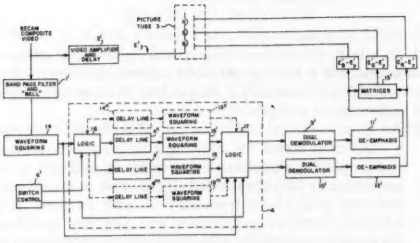
from, timing circuit means electrically connected with said calculating circuit means for receiving said timing signal therefrom and for creating from said timing signal an electrical quantity the magnitude of which corresponds to the required exposure time, part of said signal-generating circuit means and said calculating circuit means being electrically connected with each other in a closed loop arrangement for eliminating the influence of temperature fluctuations and voltage source fluctuations from some of the signals from said signal-generating means, another part of said signal-generating circuit means and said timing circuit means being electrically connected with each other in a closed loop arrangement for eliminating the influence of temperature fluctuations and voltage source fluctuation from the rest of the signals from said signal-generating means, and switching circuit means electrically connected with said timing circuit means for responding to said electrical quantity for determining the exposure time, said switching circuit means consisting of elements which are influenced to a negligible extent by temperature and voltage source fluctuations, and all of said circuit means including amplifier units, all of said amplifier units of all of said circuit means being of identical structure.

3,863,264

SEQUENTIAL COLOR AND MEMORY DECODER

Larry A. Nelson, Hillsboro, and Philip Stephen Crosby, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed May 15, 1973, Ser. No. 360,519
Int. Cl. H04n 9/42
U.S. Cl. 358—11 **15 Claims**



2. In a SECAM television system, a decoder for decoding a composite video signal for display wherein the composite video signal is separated into a chrominance signal and a luminance signal, and wherein the chrominance signal is continuously recorded and switched to produce two chrominance signals simultaneously which are limited and demodulated to supply output signals which are proportional to the deviation in the instantaneous frequency of the subcarrier of the composite video signal, and wherein the proportional signals are de-emphasized and by matricing produce color difference signals which are combined with the luminance signal in a display device, wherein the impovement comprises:

means for converting the chrominance signal into a digital signal, said digital signal preserving the zero crossings of the chrominance signal;

a plurality of means for continuously processing said digital signal to produce a plurality of chrominance signals simultaneously;

a plurality of means for converting said plurality of chrominance signals into a plurality of digital signals preserving the zero crossings of said plurality of chrominance signals;

a plurality of switches to sequentially route said digital signal and said plurality of digital signals; and

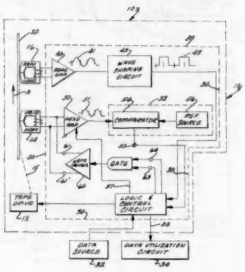
a plurality of digital demodulators to receive the sequentially routed signals, said digital demodulators to supply the output signals which are proportional to the deviation in the instantaneous frequency of the subcarrier of the composite video signal.

3,863,265

METHOD AND APPARATUS FOR INSERTING DATA RECORDS ON MAGNETIC TAPE

Marlin K. Klumpp, Ann Arbor, Mich., assignor to Sycor, Inc., Ann Arbor, Mich.

Filed Feb. 9, 1973, Ser. No. 330,941
Int. Cl. G11b 27/22, 5/02, 27/88
U.S. Cl. 360—48 **15 Claims**



1. A method of demonstrating the presence of a predetermined recording condition on a recording medium, comprising the steps of:

sensing the recording medium to detect the presence of said recording condition and producing signals having a level representative of such condition when the same is detected;

providing a reference signal having a level representative of the predetermined signal condition desired to be indicated;

comparing the level of the sensed signals with that of the reference signal;

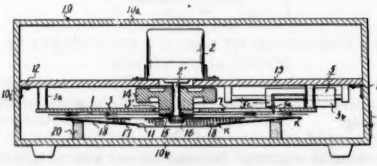
and generating a control signal when the level of the sensed signal bears a predetermined relationship to the level of the reference signal.

3,863,266

PLIANT DISK MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

Mitsuo Hoshino, Tokyo, Japan, assignor to Sony Corporation, Shinagawa-ku, Tokyo, Japan

Filed Aug. 23, 1973, Ser. No. 390,749
Claims priority, application Japan, Aug. 28, 1972, 47-100014
Int. Cl. G11b 5/52, 5/82, 25/04
U.S. Cl. 360—86 **7 Claims**



1. In an apparatus for magnetically recording and/or reproducing electrical signals and which comprises a rotatable shaft, drive means for rotating said shaft, a pliant record disk mounted at its center on said shaft for rotation with the latter and having a magnetizable surface, first and second spaced support plates respectively confronting said magnetizable surface and the opposite surface of said record disk and lo-

cated to be spaced from said record disk when the latter is centrifugally urged to a substantially planar configuration in response to rotation of said shaft, apertures in said support plates through which air enters when the record disk is rotated for forming air films flowing radially outward between said record disk and support plates and maintaining the spacing therebetween, and electromagnetic transducer means for pressing against and contacting said magnetizable surface and tracing at least one record track in a respective annular area of said magnetizable surface upon rotation of said record disk with said shaft; at least one of said support plates being perforate over the area thereof that extends in the radial direction of said record disk from at least inside said annular area of the record track traced by said transducer means to at least the outer periphery of said record disk, and said one support plate having a conically dished configuration so that the spacing between said support plates is progressively reduced in the radial direction from the center to the outer periphery of said record disk.

3,863,267

TAPE CARTRIDGE LOCKING AND EJECTING MECHANISM

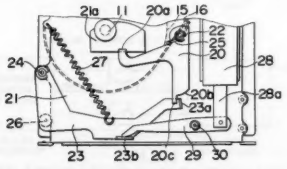
Fujinaka Yasukatsu, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 20, 1973, Ser. No. 343,025

Claims priority, application Japan, Mar. 25, 1972, 47-30083

Int. Cl. G11b *5/00, 23/04*

U.S. Cl. 360—93 **6 Claims**



1. An apparatus for use in a sound reproducing device using an interchangeable tape cartridge to be accommodated in a cartridge receiving chamber of the sound reproducing device comprising:

a pivotally supported first member operatively positioned and having one end formed with a finger extending into said cartridge receiving chamber, said first member being pivotable between first and second positions;

means coupled to said first member for biasing said first member to said first position, said first member being capable of pivoting to said second position against said biasing means upon insertion of said cartridge into said cartridge receiving chamber with the front thereof engaging against said finger;

a pivotally supported second member having one end pivotally connected to the chassis of the sound reproducing device and a second end engageable with said first member, said second member being pivotable between first and second positions;

means operatively positioned for urging said second member to move to said second position, said movement of said second member to said second position thereof by the action of said urging means occuring in response to the movement of said first member to said second position thereof with said second end of said second member in sliding engagement with said first member;

a roller rotatably carried by said second member adjacent said first end of said second member and being capable of collapsing into a V-groove formed in said cartridge for holding said cartridge in position within said cartridge receiving chamber when said roller engages in said V-groove; and

a pivotally supported third member operatively positioned and having a pair of opposed ends, one end being engageable with said second member and the other end adapted to receive an external pushing force, said third member, when receiving said external pushing force, causing said first and second members to be positioned at said first respective positions thereof by the action of said biasing and urging means while said finger, when said first member pivots towards the first position thereof, ejects the cartridge in readiness for removal thereof from the sound reproducing device.

3,863,268

MAGNETIC HEAD

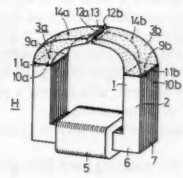
Yasuo Ikeda, Tokyo, Japan, assignor to Teac Corporation, Tokyo, Japan

Continuation of Ser. No. 277,912, Aug. 3, 1972, abandoned. This application Mar. 1, 1974, Ser. No. 447,788

Claims priority, application Japan, Aug. 7, 1971, 46-70753; Aug. 7, 1971, 46-70754

Int. Cl. G11b *5/22, 5/16, 5/28*

U.S. Cl. 360—121 **1 Claim**

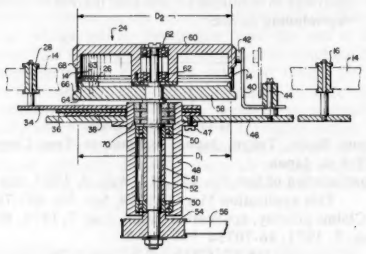


1. A multi-element magnetic head comprising at least first and second magnetic head elements, and a magnetic shield plate interposed between the first and second magnetic head elements, in which each of the first and second magnetic head elements is made up of a magnetic core consisting of a U-shaped first magnetic core member formed with laminated magnetic alloy plates and second and third magnetic core members formed of ferrite and a coil wound on the first magnetic core member; one end of each of the second and third magnetic core members of the magnetic core is joined to each end face of the first magnetic core member; the second and the third magnetic core members extend inwardly to form a magnetic gap between the end faces thereof on the opposite side from the first magnetic core member; the exterior surfaces of the second and third magnetic core members on the side of the magnetic gap serve as a magnetic tape contact surface; the magnetic shield plate consisting of a first magnetic plate member formed of a magnetic alloy plate and a second magnetic plate member formed of ferrite and joined to the end face of the first magnetic plate member, the second magnetic plate member being thicker than the first magnetic plate member; and the end face of the second magnetic plate member on the opposite side from the first magnetic plate member serves as a magnetic tape contact surface corresponding to those of the first and second magnetic head elements.

3,863,269
GUIDE DRUM APPARATUS FOR A VIDEO TAPE RECORDER AND/OR PLAYER

Takenori Akamine, Neyagawa, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 27, 1973, Ser. No. 383,145
Claims priority, application Japan, Aug. 18, 1972, 47-83016
Int. Cl. G11b 5/52, 21/04
U.S. Cl. 360—128 3 Claims



1. A guide drum apparatus for use in a video tape recorder and/or player in which a field or a frame of video signal is recorded in the longitudinal direction of a moving magnetic tape, and the recorded video signal is reproduced while the tape is moving, said apparatus comprising:

a first guide drum having a tape guiding portion formed at the periphery thereof, and having a plurality of magnetic video heads mounted thereon;

supporting means for rotatably supporting said first guide drum;

driving means for rotating said first guide drum at a rotational speed greater than the speed of movement of the tape;

a second guide drum mounted coaxially with said first guide drum and rotatable independently of said first guide drum, said second guide drum having a tape guiding portion which is formed at the periphery thereof and which is opposed to the tape guiding portion of said first guide drum so as to guide the magnetic tape therebetween; and

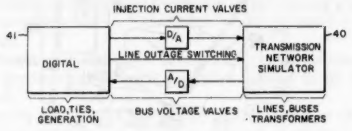
the diameter of the tape guiding portion of said second guide drum being larger than the diameter of the tape guiding portion of said first guide drum, so that said second guide drum is rotated at a lower rotational speed than that of said first guide drum by contact with the moving tape, while said first guide drum rotates at said greater rotational speed, whereby while moving around said guide drums the magnetic tape is scanned by said magnetic video heads.

3,863,270
HYBRID COMPUTER SYSTEM INCLUDING AN ANALOG CALCULATOR FOR RAPIDLY GENERATING ELECTRIC POWER SYSTEM LOADFLOW SOLUTIONS

Paul H. Haley, Pittsburgh, Pa., and Mark K. Enns, Ann Arbor, Mich.

Filed May 19, 1972, Ser. No. 255,049
Int. Cl. G06j 1/00; G06f 15/06, 15/56
U.S. Cl. 444—1 8 Claims

1. A hybrid loadflow computer arrangement comprising a D.C. analog simulator of an AC network, said simulator including a plurality of DC circuits interconnected to correspond to the AC network, a digital computer, said digital computer including means for determining data representative of predetermined network variables, means for generating output signals representative of said data to said plurality of



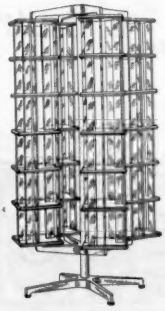
D.C. circuits, and said computer and said simulator including means for generating a loadflow solution with use of said data.

DESIGNS

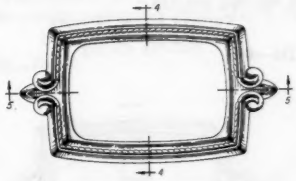
JANUARY 28, 1975

234,168
HAIR BRUSH
Walter Sporn, 18240 Harwood Ave., Homewood, Ill. 60430
Filed Dec. 17, 1973, Ser. No. 425,096
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—35

234,169
ROTARY DISPLAYER FOR PAPERBACK BOOKS
Harold L. Hudson, Gregory G. Mt. Pleasant, and Robert K. Scherzer, Liverpool, N.Y., assignors to Gaylord Bros., Inc., Syracuse, N.Y.
Filed Feb. 20, 1973, Ser. No. 333,548
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—24

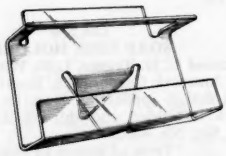


234,170
SOAP DISH HOLDER
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Original design application Nov. 10, 1972, Ser. No. 305,567. Divided and this application Feb. 27, 1974, Ser. No. 446,226
Term of patent 14 years
Int. Cl. D6—*06;* D23—*02*
U.S. Cl. D6—89

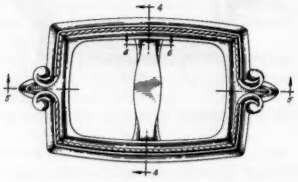


234,171
SEAT
Stapleton Long, Morristown, Tenn., assignor to The Berkline Corporation, West Springfield, Mass.
Filed May 29, 1973, Ser. No. 365,027
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

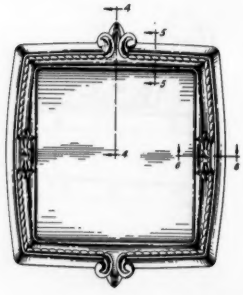
234,172
DISPLAY STAND
Daniel R. Ranney, 36 Phillips St., Boston, Mass. 02148
Filed June 11, 1973, Ser. No. 368,515
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—85



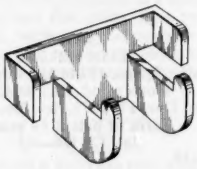
234,173
SELF-STANDING SOAP DISH HOLDER
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Original design application Nov. 10, 1972, Ser. No. 305,567. Divided and this application Feb. 27, 1974, Ser. No. 446,329
Term of patent 14 years
Int. Cl. D23—*02*; D6—*06*
U.S. Cl. D6—89



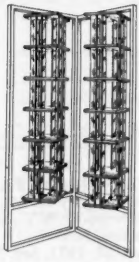
234,174
TISSUE HOLDER
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Original design application Nov. 10, 1972, Ser. No. 305,567. Divided and this application Oct. 24, 1973, Ser. No. 409,057
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—97



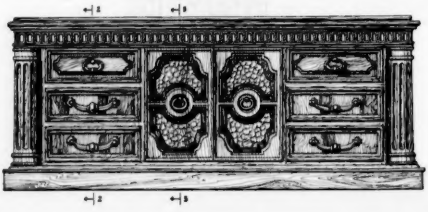
234,175
RAZOR HOLDER
Edwin J. Schellhouse, P.O. Box 7801, Reno, Nev. 89502
Filed Apr. 9, 1973, Ser. No. 349,235
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—88



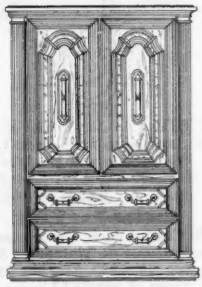
234,176
DISPLAY MODULE FOR PAPERBACK BOOKS
Harold L. Hudson, Gregory G. Mt. Pleasant, and Robert K. Scherzer, Liverpool, N.Y., assignors to Gaylord Bros., Inc., Syracuse, N.Y.
Filed Feb. 20, 1973, Ser. No. 333,549
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—139



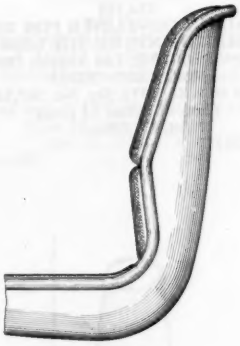
234,177
DRESSER OR THE LIKE
Huey T. Keller, 1609 Davidson Road, High Point, N.C. 27260
Continuation-in-part of design application Ser. No. 24,385, Aug. 10, 1970. This application Feb. 16, 1973, Ser. No. 333,131
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



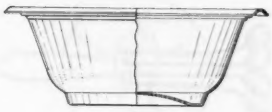
234,178
ARMOIRE OR SIMILAR ARTICLE
Huey T. Keller, 1609 Davidson Road, High Point, N.C. 27260
Continuation-in-part of design application Ser. No. 125,452, Mar. 17, 1971. This application Dec. 15, 1972, Ser. No. 315,526
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—164



234,179
SEAT
Robert L. Deschamps, Wheaton, Ill., and Raymond A. Massaccesi, Littleton, Colo., assignors to All-Steel Inc.
Original design application July 19, 1972, Ser. No. 273,323. Divided and this application Dec. 6, 1973, Ser. No. 422,172
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—197

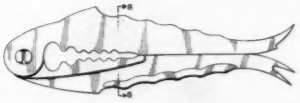


234,180
BOWL
William A. Dart and Laurence T. Uridge, Mason, Mich., assignors to Dart Container Corporation, Mason, Mich.
Filed June 25, 1973, Ser. No. 373,422
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—23

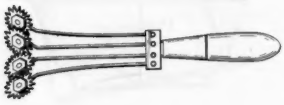


234,181
BOTTLE HOLDER
Robert F. Haswell, "Has-a-Well," Oldfield Road, Bickley, Bromley, Kent, England
Filed Nov. 3, 1972, Ser. No. 303,504
Claim priority application Japan May 8, 1972
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—70

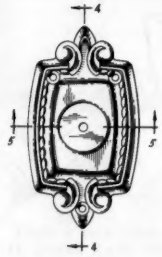
234,182
LOBSTER EATING UTENSIL
Douglas G. Mann, Boston, and Rex L. Beaton, Chelmsford, Mass., assignors to Clambake International, Incorporated, Cambridge, Mass.
Filed July 30, 1973, Ser. No. 384,017
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—105



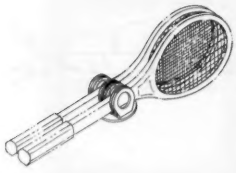
234,183
STUCCO PAINT SCRAPER
Joseph A. Malnar, 628 San Gabriel, Albany, Calif. 94706
Filed June 14, 1973, Ser. No. 370,023
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—184



234,184
ESCUTCHEON FOR HARDWARE
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Original design application Nov. 10, 1972, Ser. No. 305,567. Divided and this application Feb. 27, 1974, Ser. No. 446,118
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179



234,185
CLIP FOR HOLDING TWO TENNIS RACKETS TOGETHER
Walter L. Davis, 3158 E. Southcross, San Antonio, Tex. 78223
Filed Sept. 14, 1973, Ser. No. 397,282
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—246



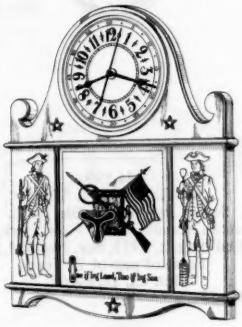
234,186
RING TRAVELLER
Charles Robert Langston, Jr., Seneca, S.C., assignor to Coats & Clark, Inc., New York, N.Y.
Filed Sept. 4, 1973, Ser. No. 394,381
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—248

234,187
BOTTLE PACKAGE
Gilbert S. Cassin, Paris, France, assignor to Les Parfums de Molyneux, S.A.
Filed Aug. 17, 1972, Ser. No. 281,488
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—12

234,188
PACKAGING CONTAINER FOR DRINK INGREDIENTS OR THE LIKE
George Otis, 715 E. Los Angeles Drive, Vista, Calif. 92083
Filed Nov. 16, 1972, Ser. No. 307,135
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—222

234,189
PACKAGING TRAY FOR DENTAL PREPARATIONS OR THE LIKE
Sven-Gunnar Hesselgren, Nybrogatan 12, 114 39 Stockholm, Sweden
Filed Mar. 10, 1972, Ser. No. 233,866
Claims priority, application Sweden Sept. 17, 1971
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—242

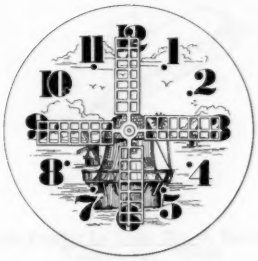
234,190
CLOCK OR SIMILAR ARTICLE
Theodore G. Daher, Stratford, Conn., assignor to General Electric Company
Filed Apr. 6, 1973, Ser. No. 348,725
Term of patent 3½ years
Int. Cl. D10—*01*
U.S. Cl. D10—6



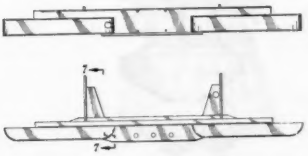
234,191
FLAG OR SIMILAR ARTICLE
Jack Might and Arnold O. Madrid, Colorado Springs, Colo.; said Madrid assignor of a fractional part interest to said Might
Filed Aug. 2, 1973, Ser. No. 385,110
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D10—109

234,192
CLOCK FACE OR THE LIKE
Stephen P. Opert, 952 Richmond Road, East Meadow, N.Y. 11554
Filed June 14, 1972, Ser. No. 262,721
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—123

234,193
COMBINED DIAL AND HAND FOR A CLOCK
Ronald B. Kemnitzer, Lisle, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed May 3, 1973, Ser. No. 357,034
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—124

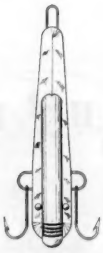


234,194
BUMPER FOR TRUCKS
Ted L. Cline, Rush Springs, Okla., assignor to Cline Industries, Rush Springs, Okla.
Filed Mar. 3, 1971, Ser. No. 120,784
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—169

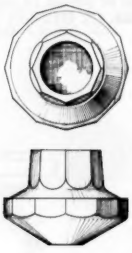


234,195
FISH LURE BODY
James D. Maxwell, P.O. Box 649, Vancouver, Wash. 98460
Filed Sept. 7, 1973, Ser. No. 395,374
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

234,196
FISHING LURE SIMULATING A SQUID
Millard F. Rose, Jr., Aloha, Oreg., assignor of a fractional part interest to Ruby F. Williams, Depoe Bay, Oreg.
Filed Dec. 7, 1973, Ser. No. 422,740
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

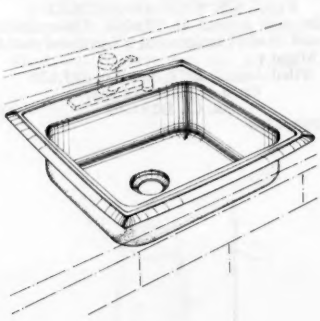


234,197
WATER TAP FILTER
Samuel Lieberman, Newton, Mass., assignor to Eugene Shannon, Dedham, Mass.
Filed Dec. 1, 1972, Ser. No. 311,243
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

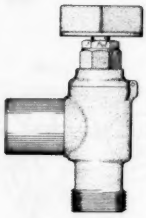


234,198
COVER FOR SHOWER HEAD
Ralph La Rue Du Bois, 4242 E. 111th St., Tulsa, Okla. 74136
Filed July 23, 1973, Ser. No. 382,084
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—36

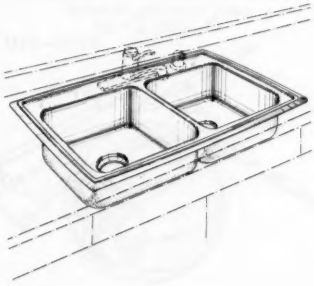
234,199
SINGLE BOWL SINK
Henry M. Stairs, Jr., Somerville, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Aug. 2, 1973, Ser. No. 385,376
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



234,200
VALVE
Lawrence W. Buechler, Franklin, Wis., assignor to Milwaukee Valve Company, Milwaukee, Wis.
Filed May 21, 1973, Ser. No. 361,949
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—19

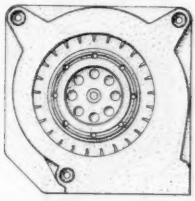


234,201
DOUBLE BOWL SINK
Henry M. Stairs, Jr., Somerville, N.J., assignor to American Standard Inc., New York, N.Y.
Filed Aug. 2, 1973, Ser. No. 385,113
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—62

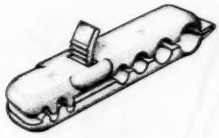


234,202
ELEVATOR TOILET SEAT FOR INVALIDS
T. Eric Aldred, 1105 8th Ave., Albany, Ga. 31707
Filed Dec. 18, 1972, Ser. No. 316,131
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71

234,203
BLOWER
Gunter Wrobel, Villingen, Black Forest, Germany, assignor to Papst-Motoren KG, St. Georgen, Black Forest, Germany
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—162

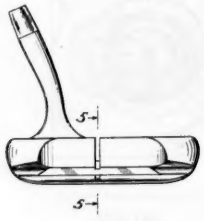


234,204
UNITARY FASTENER FOR MEDICAL AND SURGICAL APPLICATIONS
Gale W. Miller and James L. Geraci, Cincinnati, Ohio, assignors to Cincinnati Biomedical Inc., Cincinnati, Ohio
Filed May 23, 1973, Ser. No. 363,458
Term of patent 14 years
Int. Cl. D24—*02, 04;* D8—*08*
U.S. Cl. D32—1 R

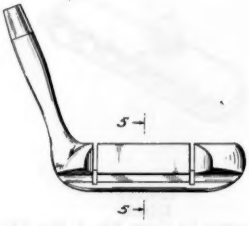


234,205
DOLL
Lair Laetter La Cour, Rte. 1, Box 53B, Natchez, La. 71456
Filed Mar. 15, 1974, Ser. No. 451,465
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4 R

234,206
GOLF PUTTER HEAD
Raymon W. Cook, 406 Top Hill, San Antonio, Tex. 78209
Filed Sept. 29, 1972, Ser. No. 293,521
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

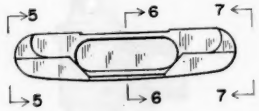


234,207
GOLF PUTTER HEAD
Raymon W. Cook, 406 Top Hill, San Antonio, Tex. 78209
Filed Sept. 29, 1972, Ser. No. 293,524
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

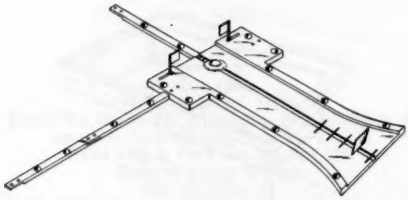


234,208
GOLF PUTTER HEAD
Raymon W. Cook, 406 Top Hill, San Antonio, Tex. 78209
Filed Sept. 29, 1972, Ser. No. 293,534
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH

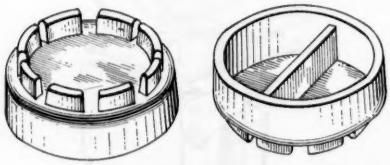
234,209
GOLF CLUB HEAD
Dan D. Bizovi, 8171 New Bradford Drive, Sterling Heights, Mich. 48077
Filed Oct. 6, 1972, Ser. No. 295,582
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



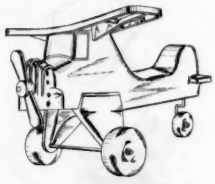
234,210
PRACTICE MAT FOR GOLFERS
Julius Menendez, 2678 Parkwilshire Drive 95124, and Louis A. Duino, 1997 McDaniel St. 95126, both of San Jose, Calif.
Filed May 7, 1973, Ser. No. 358,065
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB



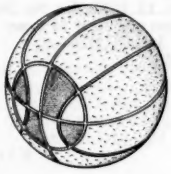
234,211
CHECKER
Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.
Filed June 4, 1973, Ser. No. 367,056
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 PC



234,212
TOY AIRPLANE
Marius J. Morin and Edward M. Ferguson, Torrance, Richard E. Henderson, Huntington Beach, and Gale D. Jenkins, Jr., Palos Verdes, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Apr. 9, 1973, Ser. No. 349,600
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH

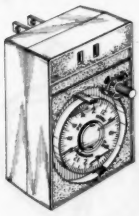


234,213
BASKETBALL
John W. Anderson, Cincinnati, Ohio, assignor to Hutch Sporting Goods, Inc., Cincinnati, Ohio
Filed May 14, 1973, Ser. No. 359,956
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 EE

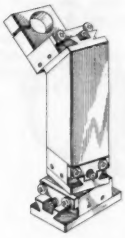


234,214
THROWING KNIFE
Harry K. McEvoy, 2155 Tremont Blvd. NW., Grand Rapids, Mich. 49504
Filed July 2, 1973, Ser. No. 375,670
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 PP

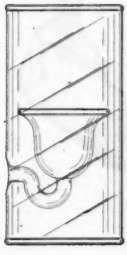
234,215
TIMER OR SIMILAR ARTICLE
Arthur M. Felske, Westport, Conn., assignor to General Electric Company
Filed July 17, 1972, Ser. No. 272,103
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D42—7 R



234,216
ADJUSTABLE MOUNTING STRUCTURE FOR DETECTOR HEADS FOR INSPECTING NEEDLES OF CIRCULAR KNITTING MACHINES
Lawrence Creigh Nickell, Ronceverte, Larry C. Nickell, Lewisburg, William Thomas Whitt, Renick, and Ernest Leo Eggleston and Robert Eugene Hanger, Alderson, W. Va., assignors to Appalachian Electronic Instruments, Inc., Ronceverte, W. Va.
Filed June 20, 1973, Ser. No. 371,866
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D47—5



234,217
CANDLE HOLDER
Jon Wolfard, 1553 Sonoma St., Albany, Calif. 94706
Filed Aug. 30, 1973, Ser. No. 393,003
Term of patent 14 years
Int. Cl. D26—*01, 02, 05*
U.S. Cl. D48—2



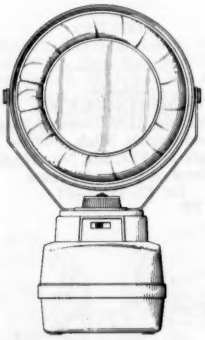
234,218
SPOTLIGHT
Anthony C. Donato, Westfield, N.J., assignor to Lightolier Incorporated, Jersey City, N.J.
Filed Jan. 22, 1974, Ser. No. 435,573
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20 K

234,219
SPOTLIGHT
Anthony C. Donato, Westfield, N.J., assignor to Lightolier Incorporated, Jersey City, N.J.
Filed Jan. 23, 1974, Ser. No. 435,605
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20 K

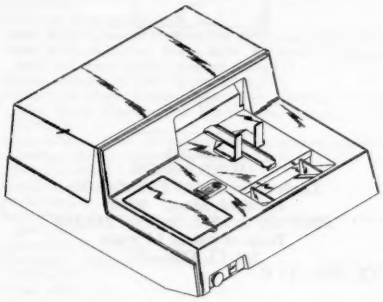
234,220
SPOTLIGHT
Anthony C. Donato, Westfield, N.J., assignor to Lightolier Incorporated, Jersey City, N.J.
Filed Jan. 23, 1974, Ser. No. 435,659
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20 K

234,221
LAMP OR THE LIKE
William Daniel Upchurch, 808 Buckle Court, Raleigh, N.C. 27609
Filed June 26, 1973, Ser. No. 373,859
Term of patent 14 years
Int. Cl. D26—*05*; D11—*04*
U.S. Cl. D48—20 B

234,222
ELECTRIC LANTERN
Daniel C. Oakley, Madison, Nolan K. Rhoades, Beloit, and Arthur R. Schmidt, Madison, Wis., assignors to ESB Incorporated
Filed Nov. 13, 1972, Ser. No. 306,001
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 R



234,223
ROTARY MICROFILMER
Andrew V. McClare, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 2, 1973, Ser. No. 347,033
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q

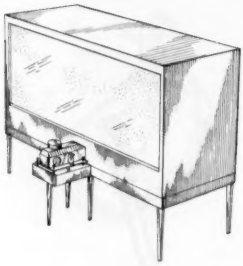


234,224
FONT OF TYPE
Darrell M. Johnson, 146 Hill St. SE., Thomson, Ga. 30824
Filed Mar. 6, 1973, Ser. No. 338,469
Term of patent 14 years
Int. Cl. D18—*03*
U.S. Cl. D64—12 B

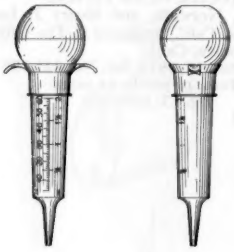
234,225
BALL POINT PEN
Kunio Ito, Funabashi, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 26, 1972, Ser. No. 318,553
Claims priority, application Japan June 23, 1972
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B

234,226
MECHANICAL PENCIL
Curtis L. Malm, Norwalk, and Henry J. Loewenthal, Woodland Hills, Calif., assignors to The Gillette Company, Santa Monica, Calif.
Filed Mar. 16, 1973, Ser. No. 341,888
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—24

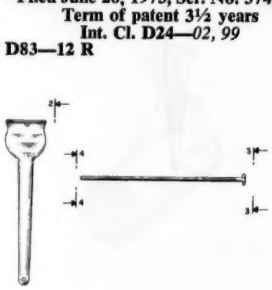
234,227
MULTI-FRAME X-RAY DISPLAY
Carl Verne Muffoletto, Baltimore County, Md. (6100 Everall Ave., Baltimore, Md. 21206)
Filed Sept. 8, 1972, Ser. No. 287,213
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 H



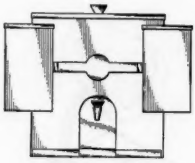
234,228
SYRINGE
Ronald E. Spiegel, Oak Brook, Ill., assignor to Cenco Medical Supply Corporation, Chicago, Ill.
Filed May 14, 1973, Ser. No. 360,151
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—12 A



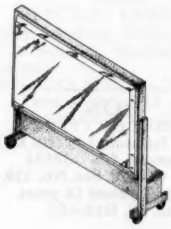
234,229
TONGUE SCRAPER
Irving Gaumont and Monte Gaumont, both of 134 W. 58th St., New York, N.Y. 10019
Filed June 28, 1973, Ser. No. 374,302
Term of patent 3½ years
Int. Cl. D24—*02, 99*
U.S. Cl. D83—12 R



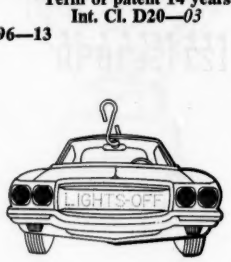
234,230
HOT WATER DISPENSER
Charles C. Zahlman, Panther Valley PT, Apt. 5B, Marsh Hawk, R.D. 2, Hackettstown, N.J. 07840
Original design application Nov. 18, 1970, Ser. No. 26,054, now Patent No. 225,917. Divided and this application Jan. 26, 1972, Ser. No. 221,137
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D94—3 A



234,231
MOBILE SIGN
Louis Alfonso, 207 Churchill St., Pittsfield, Mass. 01201
Filed July 3, 1972, Ser. No. 268,866
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 R



234,232
WARNING TAG OR SIMILAR ARTICLE
Mary O. Byrum, Miami, Fla. (249 S. Royal Poinciana Blvd., Apt. 209, Miami Springs, Fla. 33136)
Filed Jan. 5, 1973, Ser. No. 321,298
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—13



INDEX OF APPLICANTS AND ASSIGNEES

OF

PATENT APPLICATIONS PUBLISHED ON THE 28TH DAY OF JANUARY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Note that these entries will not be in numerical order by document (publication) number throughout the section as for patents; numerical ordering is possible only within subclass.

A. H. Robins Company Incorporated: *See—*
Ward, John W.; and Lybrand, Robert A., B371,805.

Aboytes, Peter, to J. M. Huber Corporation. Bonding metals to elastomer systems utilizing nitrogenous treated furnace blacks. B251,109, Cl. 156-306.000.

Aboytes, Peter, to J. M. Huber Corporation. Bonding metals to elastomer systems utilizing halogen treated furnace blacks. B251,635, Cl. 156-306.000.

Adams, John Benjamin; and Schwing, Gregory Wayne. Quinoxalinylthioallophanate fungicides. B387,790, Cl. 260-250.00Q.

Agfa-Gevaert Aktiengesellschaft: *See—*
Jores, Willi; Lehmann, Helmut; and Hoffacker, Franz, B352,965.
Jores, Willi; Hoffacker, Franz; Kreit, Bernhardt; Lehmann, Helmut; and Hardenbicker, Herbert, B396,551.
Meyer, Rudolf; and Ranz, Erwin, B366,287.
Ohlschlager, Hans; Riester, Oskar; Ghys, Theofiel Hubert; Verhille, Karel Eugeen; and Vanheertum, Johannes Josephus, B342,886.
Poot, Albert Lucien; Heugebaert, Frans Clement; Janssens, Wilhelmus; and Vandenberghe, Antoon Leon, B335,670.

Aisin Seiki Kabushiki Kaisha: *See—*
Sugisawa, Masakazu, B310,149.

Aitken, Edward A.: *See—*
Roy, Prodyot; Simpson, James L.; and Aitken, Edward A., B467,684.

Ajinomoto Co., Inc.: *See—*
Yamagata, Mineo; Akamatsu, Akira; and Togo, Kazushi, B265,727.

Akamatsu, Akira: *See—*
Yamagata, Mineo; Akamatsu, Akira; and Togo, Kazushi, B265,727.

Akashi, Naotomo: *See—*
Kushihashi, Akira; Fuziwara, Yutaka; and Akashi, Naotomo, B438,706.

Aktiebolaget Astra: *See—*
Dahlbom, Johan Richard; Karlen, Bo Lennart; and Lindgren, Sune Gunnar, B306,829.

Albright & Wilson Limited: *See—*
Carson, John William, B277,449.

Algoma Steel Corporation Limited, The: *See—*
Franceschina, Louis E.; Haromy, Fred; and Kruppert, Frederick W., B382,798.

Allcock, Harry Rex; and Gardner, James Earl, to Firestone Tire & Rubber Company, The. Molecular weight control in (NPCl) polymerization. B350,219, Cl. 423-300.000.

Allied Chemical Corporation: *See—*
Lee, Lester T. C.; and Liu, Kang-Jen, B276,993.
Segal, Leon, B337,235.

Allington, William B., to Instrumentation Specialties Company. Electrophoresis method. B411,145, Cl. 204-180.00G.

Allis-Chalmers Corporation: *See—*
Haupt, Robert C., B327,674.
Wagner, Robert J., B365,490.

Allner, Olaf, to Loewe Opta GmbH. Switching arrangement for picking up stored constant voltages. B351,863, Cl. 328-141.000.

Altschuler, Lili W., to du Pont de Nemours, E. I., and Company. Coating compositions containing a polybutadiene and a drying oil. B351,590, Cl. 260-23.70R.

Alwitt, Robert S.; and Ross, Sidney D. Electrolytic capacitor having an intergrated spacer system. B280,395, Cl. 317-230.000.

American Air Filter, Inc.: *See—*
Westlin, Karl L., B408,749.

American Induction Heating Corporation: *See—*
Lavins, Paul N., Jr., B292,563.

American Optical Corporation: *See—*
Boughton, Olin W., B362,589.
Goodwin, Bertram R., B359,825.
Richards, William D., B396,025.
Strack, Richard R.; and Smith, Merton L., B359,174.

Amery, John Gordon: *See—*
Miller, Michael Evans; and Amery, John Gordon, B351,598.

AMP Incorporated: *See—*
Lockard, Joseph Larue, B376,504.
Shoemaker, John Robert, B368,387.
Zell, Dale Richard; and Martin, John Leroy, B456,346.

Anaconda American Brass Company: *See—*
Costas, Louis P., B275,426.

Anderson, Conroy D.; Carlson, David W.; Oleck, Stephen M.; and Stover, William A., to Mobil Oil Corporation. Catalyst reactor for oxidizing carbon monoxide and hydrocarbons in gaseous stream. B269,673, Cl. 423-213.700.

Anderson, Gordon C.: *See—*
Savageau, Richard J.; Clevenger, Earl C.; and Anderson, Gordon C., B395,889.

Anderson, Willard W.; and Groom, Nelson J., to United States of America, National Aeronautics and Space Administration. Annular momentum control device used for stabilization of space vehicles and the like. B384,773, Cl. 244-165.000.

Andersson, Sven E., to Trelleborg Rubber Company, Inc. Wear resistant lining for grinding mills. B441,416, Cl. 241-300.000.

Andreaggi, Joseph R.; and Zenuch, George, to Weston Instruments Inc. Positively lockable angularly adjustable handle. B367,040, Cl. 220-96.000.

Andrejasich, Frank H.: *See—*
Greenwood, Arthur R.; Heinze, Walter W.; Schnitta, Edward; and Andrejasich, Frank H., B356,253.

Andres, Rudolf; Moller, Hermann; and Seyfried, Franz, to Daimler-Benz Aktiengesellschaft. Pneumatic control system for self alignment of motor vehicle headlights. B355,095, Cl. 240-7.1LJ.

Andrus, Edward R., Jr.; Fahnstrom, Dale E.; Hansen, James G.; and Nichols, Charles E., to Elder Wilbert Corporation. Burial casket. B289,175, Cl. 27-2.000.

Aparicio, Carl. Paving machine slip form. B346,901, Cl. 404-98.000.

Apostolov, Roumen Konstantinov: *See—*
Popov, Encho Nikolov; Diakov, Nikola Ganev; Dobreva-Dimitrova, Emilia; Apostolov, Roumen Konstantinov; and Hristov, Hristo Petkov, B360,910.

Arcara, Samuel A., to Leeds & Northrup Company. Temperature measurement with three-lead resistance thermometers by dual constant current method. B405,360, Cl. 73-362.0AR.

Archer, Bill; and Low, John Lewis, to Arlo, Inc. Twist lock joint for concrete filled, telescoping sections. B380,312, Cl. 285-290.000.

Argoudelis, Alexander D.; Coates, John H.; and Sebek, Oldrich K., to Upjohn Company, The. Composition of matter and process. B424,462, Cl. 195-80.00R.

Arlo, Inc.: *See—*
Archer, Bill; and Low, John Lewis, B380,312.

Armco Steel Corporation: *See—*
Denhard, Elbert E., Jr.; and Clarke, William C., B416,399.

Armstrong Cork Company: *See—*
Kolb, Michael J., B409,816.

Arthur, Jett C., Jr.: *See—*
Portnoy, Norman A.; Reine, Alden H.; and Arthur, Jett C., Jr., B348,558.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Komoto, Hiroshi; and Ohmura, Kaoru, B363,674.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Moriyama, Itsuki; and Enomoto, Shigeo, B420,148.

Ashikawa, Mikio; and Takemoto, Iwao, to Hitachi, Ltd. Image pick-up tube having a plurality of electrodes on the face-plate. B328,391, Cl. 313-365.000.

Assersen, Soeren Kristian. Remote-controlled valve, preferably for pneumatic sand blast units. B351,883, Cl. 137-596.150.

Atkinson, Russell W. Torsion bar floating squeegee mount for screen printer. B406,357, Cl. 101-123.000.

Atlantic Richfield Company: *See—*
Edison, Robert R.; and Dresser, Thorpe, B345,060.

Atlas Copco Aktiebolag: *See—*
Brannstrom, Kurt Osten; and Karlfors, Johannes, B368,081.
Horlin, Dick Axel; and Gunnarsson Ek, Klas Goran, B286,614.

Augustin, Eugene H.; Johnson, Roger E.; and Rakestraw, Thomas L., to Ford Motor Company. Vacuum glass stripping. B368,392, Cl. 225-2.000.

Automatic Switch Company: *See—*
Rolfe, Alfred H., B377,833.

Avarosi, Laszlo: *See—*
Mandzsu, Jozsef; Jagicza, Laszlo; Jodal Sandor; Ducza, Lajos; and Avarosi, Laszlo, B331,895.

Avellar, Karl B.; and Buchanan, James E., to Westinghouse Electric Corporation. Method and system for testing signal transmission paths. B322,239, Cl. 235-151.310.

Avery, Hazelton H.; and Morabito, Salvatore, to Duo-Fast Corporation. Electric fastener driving tool. B367,812, Cl. 227-131.000.

Babcock & Wilcox Company, The: *See—*
Seidel, William B., B318,745.

Bachmann, Klaus Jurgen; Buehler, Ernest; Shay, Joseph Leo; and Wernick, Jack Harry, to Bell Telephone Laboratories, Incorporated. Near-infrared light emitting diodes and detectors employing $CdSnP_2$:InP heterodiodes. B382,021, Cl. 29-576.000.

Bagby, Thomas L., to Caterpillar Tractor Company. Method for reclaiming collet hose fittings. B397,990, Cl. 29-427.000.

Baker, Melvin C., to du Pont de Nemours, E. I., and Company. Process for making polytetramethylene ether glycol having a narrow molecular weight distribution. B414,129, Cl. 260-615.00B.

Baldassarri, Agostino; and Cellone, Luigi, to Minnesota Mining and Manufacturing Company. Azotriazole and azotetrazole antifog, antistain and selective desensitizers for silver halide emulsions. B235,011, Cl. 96-109.000.
Baldwin, Arlen R.; and Reinhardt, Thomas A., to United States of America, Atomic Energy Commission. Thermal Battery. B351,926, Cl. 136-83.00T.
Baldwin, John J.; and Novello, Frederick C., to Merck & Co., Inc. Trisubstituted imidazoles. B383,852, Cl. 260-309.000.
Ball Brothers Service Corporation: *See—*
Zappia, Anthony T., B375,652.
Balzers Patent-und Beteiligungs-Aktiengesellschaft: *See—*
Thelen, Alfred, B421,797.
Bannai, Nubuo: *See—*
Ishii, Hajime; Bannai, Nubuo; and Nishita, Sadao, B291,694.
Barabas, Eugene S.; and Fein, Marvin M., to GAF Corporation. Graft copolymers of poly (N-vinyl lactom) having diacetone acrylamide and acrylic acid esters grafted. B312,477, Cl. 260-29.6WB.
Bard, John C.; and Seiferth, Oscar E., to Oscar Mayer & Co. Inc. Heat-and-serve packages for meat products. B276,560, Cl. 426-113.000.
Barenyi, Bela; and Renner, Hermann, to Daimler-Benz Aktiengesellschaft. Protection device for vehicle passengers. B259,236, Cl. 280-150.00B.
Bargetzi, Rene Maurice, to Reno S. A. Watch-repairing set-up. B299,267, Cl. 220-23.830.
Barnes, Russell J., to Brunswick Corporation. Electrically controlled shift mechanism for marine propulsion units. B364,528, Cl. 200-61.880.
Barrat, Christian, to Procter & Gamble Company, The. Detergent compositions containing enzymes. B310,740, Cl. 252-547.000.
Barron, Benny Gene; and Cramm, Russell Henry. One-package polyurethane coatings. B416,710, Cl. 260-77.5AP.
Barth, Harald H. Flexible jaw clutch coupling. B350,143, Cl. 64-14.000.
Bartko, John: *See—*
Tarneja, Krishan S.; and Bartko, John, B339,699.
Bartlow, David H.; Jones, Bernard Howard; and Pearson, Lee E. Method of forming circumferentially extending ribs on a rotating shell. B288,638, Cl. 156-161.000.
Barzynski, Helmut; Mark, Matthias; Storck, Gerhard; and Saenger, Dietrich. Photocurable compositions. B392,242, Cl. 96-115.00R.
Basic Incorporated: *See—*
Vickery, Glenn C., B388,580.
Basque, Max G.; Magner, James E.; Surls, Joseph P.; and West, Ben F., to Dow Chemical Company, The. Method of preparing titanium dioxide pigment. B336,978, Cl. 423-611.000.
Bastian, Donald G., to SCM Corporation. Changeable type head. B405,248, Cl. 197-36.000.
Batcher, Kenneth Ray, to Westvaco Corporation. Papermaking machine headbox slice opening adjusting screws. B392,732, Cl. 162-347.000.
Bayer Aktiengesellschaft: *See—*
Bockmann, August; Teichmann, Gunter; and Rudolph, Hans, B380,926.
Boehmke, Gunther; and Theidel, Hans, B189,772.
Boehmke, Gunther; and Theidel, Hans, B189,773.
Boehmke, Gunther, B283,300.
Dorlars, Alfons; and Schellhammer, Carl-Wolfgang, B322,182.
Grohe, Klaus, B271,104.
Muller, Karl-Heinz; Rohr, Harry; and Ott, Karl-Heinz, B262,241.
Roeder, Henning; Langner, Gunther P.; Scherhag, Bernd; Nickenig, Hans-Lothar; and Loix, Rene, B285,200.
Schuster, Herbert; Huther, Edmund; Ott, Karl-Heinz; and Dinges, Karl, B256,936.
Swodenk, Wolfgang; and Scharfe, Gerhard, B330,536.
Traubel, Harro; and Konig, Klaus, B314,049.
Velker, Eugen; Bentz, Francis; and Nischk, Gunther, B311,413.
Wandel, Martin; Salamon, Manfred; Dornheim, Gotz Gotmar; and Kuhlman, Bernard, B286,913.
Wolfrum, Gerhard; Sommer, Richard; and Klauke, Erich, B327,109.
Beacham, Harry Hoyt: *See—*
Wright, Carl Leonard; and Beacham, Harry Hoyt, B420,514.
Beal, Robert E., to United States of America, Agriculture. Feed additive for poultry from soybean oil soapstocks. B328,200, Cl. 426-177.000.
Bean, Lloyd F., to Xerox Corporation. Migration imaging member and method. B327,363, Cl. 96-1.500.
Beauchamp, Jesse L. Ion cyclotron resonace spectrometer and method. B455,520, Cl. 250-291.000.
Becker, Carl: *See—*
Wegmann, Jacques; Becker, Carl; Zwahlen, Guenther; and Kuster, Werner, B348,383.
Beckerman, Martin; Murphy, John A.; Orlandi, John V.; and Smith, George W., to International Business Machines Corporation. Method of making tubeless gas panel. B351,672, Cl. 316-20.000.
Beckers, Norman L., to Diamond Shamrock Corporation. Methylene chloride stabilized with ketones. B334,985, Cl. 260-652.50R.
Bell-Northern Research Ltd.: *See—*
Coderre, William Michael; Berglund, Carl Neil; and Tillman, Philip Robert, B361,347.
Han, Swan Bing, B394,088.
Bell, Reuben Hays: *See—*
Morrison, Albert R.; Haynes, Harold L.; and Bell, Reuben Hays, B319,414.
Bell Telephone Laboratories, Incorporated: *See—*
Bachmann, Klaus Jurgen; Buehler, Ernest; Shay, Joseph Leo; and Wernick, Jack Harry, B382,021.
Bonser, Richard Harlan; and Willett, Robert Joseph, B411,633.
Dyment, John Cameron; and Schwartz, Bertram, B292,126.
Fitch, Scott McDowell; Kolensky, Leo Michael; Panek, Joseph Conrad; Rife, David Charles; and Schaefer, Walter Rudolph, B309,207.
Ingle, James Flagg, B351,493.
Ketchow, Doris Rahb, B421,026.
McDonald, Henry Stanton, B295,674.
Miller, Calvin Max, B408,380.
O'Neill, John Francis, B349,948.
Peterson, William Anders, B389,639.
Rosenberg, Robert L.; and Schmidt, Ronald Vernon, B410,168.
Schardt, Courtney Harold; and Schepis, Albert James, B355,269.
Seidel, Harold, B361,569.
Bellina, Russell F., to du Pont de Nemours, E. I., and Company. 1-Heterocyclic carbamoyl -n- carbamoyloxy formimidates. B369,607, Cl. 260-239.0BF.
Bender, Paul E.; and Loev, Bernard, to SmithKline Corporation. Chroman and chromene compounds. B380,446, Cl. 260-345.200.
Bendix Corporation, The: *See—*
Kasselmann, John T.; Colpaert, James J.; and Burnett, Richard T., B400,310.
Benerito, Ruth R.: *See—*
Berni, Ralph J.; Benerito, Ruth R.; and Pilkington, Mary W., B315,731.
Bengtson, Olle, to Imperial Chemical Industries Limited. Method of making isocyanate-based foam-oilled panels. B176,995, Cl. 156-79.000.
Beninate, John V.: *See—*
Donaldson, Darrell J.; Drake, George L., Jr.; Beninate, John V.; Reeves, Wilson A.; and Daigle, Donald J., B265,862.
Benton, Richard E., to General Tire & Rubber Company, The. Sponge rubber rug underlay having improved heat age resistance. B351,218, Cl. 260-2.5HB.
Bentz, Francis: *See—*
Velker, Eugen; Bentz, Francis; and Nischk, Gunther, B311,413.
Bergfjord, John Alf; Grammatica, Steven James; and Radler, Richard William, to Xerox Corporation. Photoelectric and electrophotographic pigments comprising derivatives of condensed polycyclic aromatic hydrocarbon aldehydes. B337,787, Cl. 96-1.500.
Berglund, Carl Neil: *See—*
Coderre, William Michael; Berglund, Carl Neil; and Tillman, Philip Robert, B361,347.
Berkes, John S.; Hillegas, William J.; and Ing, Samuel W., to Xerox Corporation. Image recording process. B283,124, Cl. 96-27.00R.
Bernard, Jacques Leon, to Centre National D'Etudes Spatiales. Apparatus for the formation of coatings on a substratum. B236,609, Cl. 204-298.000.
Berni, Ralph J.; Benerito, Ruth R.; and Pilkington, Mary W., to United States of America, Agriculture. Process for increasing receptivity to fluorescent whitening agents in resin-treated cellulosic textiles. B315,731, Cl. 8-185.000.
Berry, Robert L.; and Dehne, Axel G., to Hughes Aircraft Company. Vuilleumier refrigerator with separate pneumatically operated cold displacer. B447,417, Cl. 62-6.000.
Bertelli, Italo: *See—*
Tangorra, Giorgio; Bertelli, Italo; and Calori, Giovanni, B364,334.
Bertrams, Johannes Kurt, deceased (by Mulkens, Casper Antonium Henricus, administrator). Voltage rail. B340,767, Cl. 191-29.000.
Bessiere, Pierre Etienne, to Labavia-S.G.E. Vehicle braking devices. B358,939, Cl. 188-296.000.
Biddick, Royce E.: *See—*
Margulies, Robert S.; and Biddick, Royce E., B346,613.
Biernot, Oskar Karl, to Moeller & Neumann. Sheet cutting. B425,539, Cl. 83-27.000.
Bille, Heinz. Apparatus for pumping liquid concrete. B351,055, Cl. 417-516.000.
Bille, Heinz: *See—*
Petersen, Harro; Erhardt, Klaus; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenther, B314,800.
Bischoff, Robert F., Jr. Grille or divider for a window sash. B346,145, Cl. 52-456.000.
Bither, Tom Allen, Jr., to du Pont de Nemours, E. I., and Company. Metal boracites. B414,288, Cl. 423-277.000.
Block, Bruce E.; and Samuelson, Philip H., to Rockford Automation, Inc. Power driven conveyor. B449,647, Cl. 104-172.00B.
Blom, Hendrik; and Mollet, Prudent Eduardus Jacobus. Asymmetric aperture corrector for a television image signal. B357,803, Cl. 178-7.100.
Blum, Dieter: *See—*
Gaeth, Rudolf; Hoelscher, Friedrich; Schmitt, Bernard; and Blum, Dieter, B320,261.
Bobkowicz, Andrew John: *See—*
Bobkowicz, Emilian; Bobkowicz, Andrew John; and Lefebvre, Margaret Mary, B294,103.
Bobkowicz, Emilian; Bobkowicz, Andrew John; and Lefebvre, Margaret Mary. Composite yarn forming method and apparatus. B294,103, Cl. 57-35.000.
Bockmann, August; Teichmann, Gunter; and Rudolph, Hans, to Bayer Aktiengesellschaft. Free flowing dispersible inorganic pigment of filler compositions containing hydroxyalkylate alkylene diamines. B380,926, Cl. 106-308.00N.

Boehmke, Gunther; and Theidel, Hans, to Bayer Aktiengesellschaft. Pyrazoline brighteners. B189,772, Cl. 260-239.650.
Boehmke, Gunther; and Theidel, Hans, to Bayer Aktiengesellschaft. Triazole-coumarins. B189,773, Cl. 260-308.00R.
Boehmke, Gunther, to Bayer Aktiengesellschaft. Emulsifying carrier compositions and process for emulsifying carriers containing hydroxyaryl groups. B283,300, Cl. 8-169.000.
Bol, Arie; Van Ginkel, Johannes; van Der Schoot, Andrianus Henricus Maria; and Swaanen, Petrus Henricus, to U.S. Philips Corporation. Method of manufacturing a multiple magnetic head. B387,687, Cl. 29-603.000.
Boller, Thomas E.; and Guerra, Salvatore, to Ford Motor Company. Glass cutting fluid. B357,402, Cl. 252-58.000.
Bollert, Ulrich; Kleiner, Hans-Jerg; and Jakob, Franz, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Flame resistant synthetic linear polyesters and shaped structures made thereof. B390,738, Cl. 260-75.00P.
Bollinger, John J.: *See—*
Watson, George A.; and Bollinger, John J., B354,296.
Bond, William D.; and Zemke, Bruce E., to General Motors Corporation. Quick warm-up intake manifold. B394,188, Cl. 123-122.00H.
Bonser, Richard Harlan; and Willett, Robert Joseph, to Bell Telephone Laboratories, Incorporated. Fault detection arrangement for digital transmission system. B411,633, Cl. 340-146.10C.
Booth, David W.: *See—*
Jones, Marvin L.; and Booth, David W., B287,164.
Borchert, Alfred E.: *See—*
Condo, Albert C.; Knight, George R.; Burt, Glenn R.; and Borchert, Alfred E., B418,490.
Borg-Warner Corporation: *See—*
Padgitt, Kenneth W., B380,310.
Boughton, Olin W., to American Optical Corporation. Binocular body for microscope permitting variation of interpupilary distance without compensating lenses. B362,589, Cl. 350-75.000.
Bowdle, Raymond Ralph; and Laybourn, Robert Junior, to International Business Machines Corporation. Drum printer. B284,297, Cl. 197-54.000.
Bowen, Arlen J.; Dickson, LeRoy D.; Goretzki, Jerome A.; Hendrickson, Kenneth E.; King, Donald P.; Kueper, Terrance W.; and Soderstrom, Ronald L., to International Business Machines Corporation. Omnidirectional optical scanner. B382,783, Cl. 235-61.11E.
Bowes, Emerson: *See—*
Lucki, Stanley J.; Chen, Nai Yuen; and Bowes, Emerson, B350,245.
Bowman, Raymond D., to Cavalier Corporation. Vending machine electrical operating circuit. B334,251, Cl. 194-10.000.
Braden, William Bernard, Jr., to Texaco Inc. Recovery process for a reservoir having a gas saturation. B295,770, Cl. 166-274.000.
Brannstrom, Kurt Osten; and Karlfors, Johannes, to Atlas Copco Aktiebolag. Combustion engine driven hammer machines. B368,081, Cl. 173-48.000.
Bratkowski, Walter V.; and Spewock, Metro, to Westinghouse Electric Corporation. Permanent-magnet type relay. B439,168, Cl. 335-179.000.
Breuer, Hermann: *See—*
Treuner, Uwe D.; and Breuer, Hermann, B258,687.
Brewster, Roger F., to General Motors Corporation. Rectifier circuit for providing six-phase rectification of three-phase alternating current. B409,657, Cl. 321-5.000.
Bristol-Myers Company: *See—*
Godfrey, John Carl, B262,378.
Naito, Takayuki; Nakagawa, Susumu; and Toda, Soichiro, B371,085.
Brizee, Mary Jane W.: *See—*
Millikan, Allan G.; and Brizee, Mary Jane W., B360,719.
Brokke, Mervin E., to Stauffer Chemical Company. Certain trifluorobutenyl compounds and their utility as nematocides. B354,979, Cl. 260-326.0NS.
Brooks, Roger Dean, to Deere & Company. Test fixture for determining static and dynamic loading on clutch plates. B363,892, Cl. 73-118.000.
Broughton, Clifton William; and Truemper, Joseph Tucker, to ICI United States Inc. Removal of iron contaminants from porous materials. B310,271, Cl. 252-444.000.
Brown, Theodore E., Jr.; and Willis, Frank M., to du Pont de Nemours, E. I., and Company. Process for continuously forming compartmented packages. B417,299, Cl. 53-28.000.
Browning Arms Company: *See—*
Browning, Val A., B437,172.
Browning, Val A., to Browning Arms Company. Self-retaining magazine plug. B437,172, Cl. 42-49.00A.
Bruder, Joseph Albert, to Calspan Corporation. Method and apparatus for off-boresight angle correction for monopulse radars with slow agc normalization. B346,487, Cl. 343-16.00M.
Brumleve, Thomas D.; Hicks, Mearle G.; and Jones, Milton O., to United States of America, Atomic Energy Commission. System for remote control of underground device. B381,632, Cl. 340-15.000.
Brunswick Corporation: *See—*
Barnes, Russell J., B364,528.
Hundertmark, James M., B416,832.
Buchanan, James E.: *See—*
Avellar, Karl B.; and Buchanan, James E., B322,239.
Buchel, Karl Heinz; Frohberger, Paul-Ernst; Scheinpflug, Hans; and Enders, Edgar, to Farbenfabriken Bayer Aktiengesellschaft. 2-Substituted phenylhydrazonoimidazolenine fungicidal and bactericidal agents. B261,828, Cl. 424-273.000.
Bucherl, Erwin, to Siemens Aktiengesellschaft. Electrical filter with a nyquist flank characteristic. B389,807, Cl. 333-70.00R.
Buehler, Arthur; and Schuetz, Hans-Ulrich. Mixed chromium-containing azo dyestuffs containing, per atom of chromium, one molecule of an o,o'-dihydroxy-sulphophenylene-azo-naphthalene and one molecule of an -o-hydroxyphenylene-azo-acetoacetamide. B190,679, Cl. 260-145.00A.
Buehler, Ernest: *See—*
Bachmann, Klaus Jurgen; Buehler, Ernest; Shay, Joseph Leo; and Wernick, Jack Harry, B382,021.
Buehlmann, Xaver: *See—*
Hess, Hans; Mueller, Guenther; and Buehlmann, Xaver, B266,195.
Bunker-Ramo Corporation, The: *See—*
Older, Robert B.; and Smith, Charles W., B437,450.
Burgess, Robin Henry; and Tomlinson, Richard William, to Imperial Chemical Industries Limited. Prevention of polymer build up in reactors used for vinyl chloride polymerization. B415,124, Cl. 260-92.80W.
Burley, Harvey A., to General Motors Corporation. Rotor mounted spark plug for rotary engine. B406,800, Cl. 123-8.090.
Burnett, Richard T.: *See—*
Kasselmann, John T.; Colpaert, James J.; and Burnett, Richard T., B400,310.
Burrows, John: *See—*
Harris, Arthur; Burrows, John; and Hargreaves, James Roger, B265,369.
Burt, Glenn R.: *See—*
Condo, Albert C.; Knight, George R.; Burt, Glenn R.; and Borchert, Alfred E., B418,490.
Burton, John S.; and Whitney, Ronald L., to Terminal Data Corporation. Controlled document recording system. B430,140, Cl. 355-41.000.
Bussell, George W. Corrosion resistant coated metal. B343,136, Cl. 117-132.00B.
Buzzolini, Mario Gustav; and Manning, Robert Everett, to Sandoz-Wander, Inc. α-(p-Benzyloxyphenyl)-p-Cresol. B442,919, Cl. 260-613.00R.
Byrd, Diane F.: *See—*
Ertingshausen, Gerhard; and Byrd, Diane F., B314,977.
C.E.R.P.H.A. (Centre European de Recherches Pharmacologiques): *See—*
Godfroid, Jean Jacques; and Thuillier, Jean Eugene, B353,986.
C. Reichert Optische Werke AG: *See—*
Dehlink, Alois F., B425,035.
Caldwell, Edward N., to Robertshaw Controls Company. Pneumatically operated pilot relay and system and diverting relay construction utilizing the same or the like. B405,132, Cl. 137-625.500.
Calgon Corporation: *See—*
Powell, Alfred, B336,566.
Calori, Giovanni: *See—*
Tangorra, Giorgio; Bertelli, Italo; and Calori, Giovanni, B364,334.
Calspan Corporation: *See—*
Bruder, Joseph Albert, B346,487.
Camp, Harold E.; and Grier, John D., to Owens-Illinois, Inc. Data handling system with rotatable fiber optic shutter. B340,212, Cl. 340-173.0PL.
Cardinal, Daniel E., Jr. Vacuum conduit pick-up device. B380,900, Cl. 56-328.00R.
Caretta, Renato, to Industrial Pirelli S. p. A. Machines for manufacturing pneumatic tires, in particular radial tires. B287,275, Cl. 156-416.000.
Caricchio, Jerome J., Jr.; Saxenmeyer, George J., Jr.; and York, Edward R., to International Business Machines Corporation. Process for the electrodeposition of ductile palladium and electroplating bath useful therefor. B450,499, Cl. 204-47.000.
Carl U. Peddinghaus: *See—*
Overkott, Franz Josef, B322,777.
Carlos, Donald D.; and Hicks, Darrell D. Thermoset coatings from non-reactive polymers. B415,847, Cl. 260-86.10E.
Carlson, Curtis Raymond; Gorog, Istvan; and Heyman, Philip Michael, to RCA Corporation. Gated oscillator having constant average d.c. output voltage during on and off times. B445,471, Cl. 331-108.00D.
Carlson, David W.: *See—*
Anderson, Conroy D.; Carlson, David W.; Oleck, Stephen M.; and Stover, William A., B269,673.
Carson, John William, to Albright & Wilson Limited. Roadstone. B277,449, Cl. 117-21.000.
Carter, James L.: *See—*
Sinfelt, John H.; and Carter, James L., B411,483.
Caterpillar Tractor Company: *See—*
Bagby, Thomas L., B397,990.
Clasper, Thomas; Hutton, Wilfred H.; Kessinger, Orville E., Jr.; Randour, Victor; and Simpson, Fred E., B373,428.
Clouse, Jerry A., B316,239.
Komsa, Sasha, B323,203.
Orr, Robert S.; and Fidler, Carl E., B345,567.
Reinsma, Harold L., B342,763.
Caughlin, James Daniel; and Ozeroff, William John, to Daniel, James Caughlin. Vehicle brake and indicator light control system. B222,188, Cl. 340-72.000.
Cavalier Corporation: *See—*
Bowman, Raymond D., B334,251.
Caveny, Leonard H.; and Summerfield, Martin. Embedded porous element rocket motor. B357,039, Cl. 60-254.000.
Cekoric, Thomas, Jr.; and Yananton, Patrick Michael, to Hoffmann-La Roche Inc. Diagnostic device. B400,080, Cl. 195-103.50R.

Cellone, Luigi: *See—*
Baldassarri, Agostino; and Cellone, Luigi, B235,011.

Centre Electronique Horloger S.A.: *See—*
Oguey, Henri J.; and Vittoz, Eric Andre, B459,425.

Centre National D'Etudes Spatiales: *See—*
Bernard, Jacques Leon, B236,609.

Chance, Leon H., to United States of America, Agriculture. Process for treating organic textiles with flame retardant polymers made from hydroxymethylphosphorus compounds and guanazoles. B328,205, Cl. 8-116.00P.

Chang, Hsu; Chen, Tien Chi; and Tung, Chin, to International Business Machines Corporation. Symmetric switching functions using magnetic bubble domains. B351,665, Cl. 340-174.0TF.

Chapman, Charles C., to Phillips Petroleum Company. Recovery of ethane and hf and equipment costs reduction in alkylation of hydrocarbons. B426,674, Cl. 260-683.410.

Chapman, Jack C., to Minnesota Mining and Manufacturing Company. Contact duplication of magnetic signals utilizing a dual-material intermediate including both low T_c and high T_c material. B333,876, Cl. 360-17.000.

Chemische Werke Witten GmbH: *See—*
Katzschmann, Ewald, B178,475.

Chen, Nai Yuen: *See—*
Lucki, Stanley J.; Chen, Nai Yuen; and Bowes, Emerson, B350,245.

Chen, Stephen S., to General Motors Corporation. Engine starter motor control for preventing damage during hydraulic lock. B415,977, Cl. 318-434.000.

Chen, Tien Chi: *See—*
Chang, Hsu; Chen, Tien Chi; and Tung, Chin, B351,665.

Cheng, Paul J., to Phillips Petroleum Company. Multistage cyclonic separator. B313,098, Cl. 55-345.000.

Chevron Research Company: *See—*
Foehr, Edward G., B329,476.
Schneider, Ronald A., B356,887.

Chiklis, Charles K., to Polaroid Corporation. Photographic products containing anti-reflection layer. B354,008, Cl. 96-72.000.

Ciba-Geigy Corporation: *See—*
Kristinsson, Haukur; and Rufenacht, Kurt, B435,343.

Cities Service Oil Company: *See—*
Oliver, Don L., B403,355.
Wolford, Lionel T.; and Wadsworth, Francis T., B313,900.

Clark, John O.; Rafferty, James B.; and Schindler, Donald G., to United States Steel Corporation. Ultrasonic testing of tubing employing a spiral wave generator. B357,131, Cl. 73-67.80S.

Clarke, William C.: *See—*
Denhard, Elbert E., Jr.; and Clarke, William C., B416,399.

Clasper, Thomas; Hutton, Wilfred H.; Kessinger, Orville E., Jr.; Randour, Victor; and Simpson, Fred E., to Caterpillar Tractor Company. Track idler wheel. B373,428, Cl. 305-21.000.

Clevenger, Earl C.: *See—*
Savageau, Richard J.; Clevenger, Earl C.; and Anderson, Gordon C., B395,889.

Clouse, Jerry A., to Caterpillar Tractor Company. Horsepower limiter and overfueling control mechanism. B316,239, Cl. 123-139.0ST.

Coate Burial Vault, Inc.: *See—*
Yost, Kenneth J., B340,833.

Coates, John H.: *See—*
Argoudelis, Alexander D.; Coates, John H.; and Sebek, Oldrich K., B424,462.

Cobb, Leslie Hamilton; Mann, David; and Remmington, Timothy Alan. Method of producing metallized thermoplastic articles. B220,683, Cl. 117-62.000.

Coderre, William Michael; Berglund, Carl Neil; and Tillman, Philip Robert, to Bell-Northern Research Ltd. Electrical luminescent display devices. B361,347, Cl. 313-514.000.

Cogne Macchine Tissili Cognetex S.p.A.: *See—*
Grossi, Oscar, B424,748.

Cohen, Marvin: *See—*
von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, B438,053.

Cohen, Morrel H.; Miles, Malcolm G.; and Wilson, James D., to Monsanto Company. Electrically conducting organic salts. B318,122, Cl. 260-327.00M.

Collins, Floyd K.; and Miller, John J., to GTE Sylvania Incorporation. Cathode structure for cathode ray tube. B393,970, Cl. 313-270.000.

Colpaert, James J.: *See—*
Kasselmann, John T.; Colpaert, James J.; and Burnett, Richard T., B400,310.

Columbine Glass Company: *See—*
Fogelberg, Clement V.; and Kujave, John M., B373,326.

Combustion Engineering, Inc.: *See—*
Fallon, George William, III, B430,106.
Fernandes, John Henry, B375,220.
Ward, Charles Theodore; Mathis, Donald Lee; Radcliff, Frank Taylor; and Vorwerk, Richard, B384,658.

Concast A.G.: *See—*
Schmid, Markus, B337,442.

Condo, Albert C.; Knight, George R.; Burt, Glenn R.; and Borchert, Alfred E. Structure for protecting and insulating frozen substrates and method for producing such structures. B418,490, Cl. 404-31.000.

Continental Can Company, Inc.: *See—*
Frankenberg, Henry E., B349,141.

Cook, Homer Johnnie, to du Pont de Nemours, E. I., and Company. Process for continuously preparing extrudable, crosslinkable polyethylene compositions. B329,816, Cl. 264-141.000.

Cooksey, John Andrew, to Singer Company, The. Deflection amplifier. B348,495, Cl. 315-408.000.

Cool, Hans. R-c feedback oscillator with plural frequency selecting switches producing output signal only when a single switch is closed. B392,753, Cl. 331-110.000.

Coraluppi, Enzo; De Saraca, Elio; and Vittore, Lorenzo, to Minnesota Mining and Manufacturing Company. Naphtolic couplers. B311,317, Cl. 96-56.100.

Cory Corporation: *See—*
Vitous, Charles J., B359,187.

Costas, Louis P., to Anaconda American Brass Company. Method of monitoring the active roughening agent in a copper plating bath. B275,426, Cl. 204-1.00T.

Coucoulas, Alexander, to Western Electric Company, Incorporated. Bonding of dissimilar workpieces to a substrate. B413,006, Cl. 29-471.100.

Cox, Ralph, to Phillips Petroleum Company. Method for activating a catalyst. B337,409, Cl. 252-467.000.

CPC International Inc.: *See—*
Daniher, Francis A.; and Visek, Kenneth E., B285,796.

Cramm, Russell Henry: *See—*
Barron, Benny Gene; and Cramm, Russell Henry, B416,710.

Crawley, Barry G., to Gestaldt International Limited. Automatic orthophoto printer and display including position error compensation for photo-positioning transport. B425,541, Cl. 356-2.000.

Crouch, Stephen John. Rear wheel suspension for a vehicle having a beam axle. B380,338, Cl. 280-124.00R.

Csejka, David A.: *See—*
Sawyer, Arthur W.; and Csejka, David A., B328,210.

Cuhel, Gerald A.: *See—*
Wamsley, Vernon R.; and Cuhel, Gerald A., B308,661.

Culton, Jon: *See—*
Kansy, Robert; and Culton, Jon, B430,149.

Cuzzo, John, to Westinghouse Electric Corporation. Electronic integrator with voltage controlled time constant. B288,627, Cl. 235-183.000.

Dachs, Karl; Faulhaber, Gerhard; Fikentscher, Rolf; Oppenlaender, Knut; and Schulze, Joachim. Printing fibrous material. B259,274, Cl. 117-15.000.

Dahlberg, John R.; and Grove, Robert H., to PPG Industries, Inc. Method for trimming glass. B422,949, Cl. 225-2.000.

Dahlbom, Johan Richard; Karlen, Bo Lennart; and Lindgren, Sune Gunnar, to Aktiebolaget Astra. Oxotremorine antagonist. B306,829, Cl. 260-326.250.

Daido Seiko Kabushiki Kaisha: *See—*
Okato, Tetsu; and Sekio, Isao, B289,883.

Daigle, Donald J.: *See—*
Donaldson, Darrell J.; Drake, George L., Jr.; Beninate, John V.; Reeves, Wilson A.; and Daigle, Donald J., B265,862.

Daimler-Benz Aktiengesellschaft: *See—*
Andres, Rudolf; Moller, Hermann; and Seyfried, Franz, B355,095.
Barenyi, Bela; and Renner, Hermann, B259,236.
Geier, Bernd, B386,403.
Kramer, Willi; and Schanzer, Hans-Peter, B261,378.
Lamm, Heinz, B295,481.

Damschroder, Rudolph E.; and Hughes, Donald J., to Eastman Kodak Company. Process by which at least one stripe of one material is incorporated in a layer of another material. B248,916, Cl. 117-239.000.

Daniel, James Caughlin: *See—*
Caughlin, James Daniel; and Ozeroff, William John, B222,188.

Daniher, Francis A.; and Visek, Kenneth E., to CPC International Inc. Preparation of N,N-dialkylacylamides. B285,796, Cl. 260-561.00N.

Dauner, Bertram Wilhelm-Georg; Marx, Helmut Hermann; and Wolfram, Karl-Heinz Arno, to Koenig & Bauer Aktiengesellschaft. Device for locking up flexible printing plates on forme cylinders of printing press. B351,939, Cl. 101-415.100.

Davidson, Raymond John, to Nilux Holding Societe Anonyme. Segregation process for beneficiating nickel, copper, or cobalt oxidic ore. B207,272, Cl. 75-1.000.

Davis, Charles W., to Texaco Inc. Internal combustion engine. B302,692, Cl. 123-32.0ST.

Davis, Robert S.: *See—*
Wiggins, Glenn C.; Kreh, Marvin J.; and Davis, Robert S., B237,953.

De Rotterdamsche Droogdok Maatschappij N.V.: *See—*
Mulder, Jan Pieter Fokke, B260,455.

Dean, Raymond Harkless, to RCA Corporation. Method of making a semiconductor device. B316,014, Cl. 117-212.000.

Decisio ı Data Computer Corporation: *See—*
Miller, Robert J., B365,855.

Decker, Herbert, to Triumph Werke Nurnberg, A.G. Typehead support for a single element printer. B350,523, Cl. 197-55.000.

Deere & Company: *See—*
Brooks, Roger Dean, B363,892.
Freiburger, Thomas William, B293,437.
Lohr, Thomas Herbert; and Scholten, Stephen Clair, B352,934.
Teja, Mohindar Singh, B376,799.
Williams, Lary Lynn, B387,331.

Dehlink, Alois F., to C. Reichert Optische Werke AG. Microscope condenser. B425,035, Cl. 350-229.000.

Dehne, Axel G.: *See—*
Berry, Robert L.; and Dehne, Axel G., B447,417.

Dekking, Henri G. G., to General Tire & Rubber Company, The. Block copolymerization with azoamidino compounds as initiator. B292,140, Cl. 260-884.000.

De Klerr, Jacobus Johannes Maria Joseph: *See—*
Hasker, Jan; and De Klerr, Jacobus Johannes Maria Joseph, B381,074.

Delano, Richard; and Raseman, Chad J. Method of controlling solar heat and light in green houses. B278,991, Cl. 117-333.000.

Demarest, Donald J.; and Heytmeijer, Herman R., to Westinghouse Electric Corporation. Method of preparing halophosphate phosphor of controlled particle size. B345,390, Cl. 252-301.40P.

Dembiak, Matthew R.; and Glosek, John J., to Western Electric Company, Incorporated. Methods of and apparatus for controlling the thickness of an annular extrusion. B455,775, Cl. 264-40.000.

Denhard, Elbert E., Jr.; and Clarke, William C., to Armco Steel Corporation. Free-machining, corrosion-resistant ferritic stainless steel and article. B416,399, Cl. 75-126.00C.

De Saraca, Elio: *See—*
Coraluppi, Enzo; De Saraca, Elio; and Vittore, Lorenzo, B311,317.

Deters, Elmer M., to Weil-McLain Company Inc. Control apparatus for a water supply system. B405,305, Cl. 417-26.000.

Deumens, Johannes J. M.: *See—*
Schaafsma, Sijbrandus E.; and Deumens, Johannes J. M., B336,243.

Deutsch, Josef, to Siemens Aktiengesellschaft. Circulator with connecting arms designed in accodance with the mic technique. B409,251, Cl. 333-1.100.

Devik, Ole Gabriel: *See—*
Tangsrud, Nils; and Devik, Ole Gabriel, B363,337.

Diakov, Nikola Ganev: *See—*
Popov, Encho Nikolov; Diakov, Nikola Ganev; Dobreva-Dimitrova, Emilia; Apostolov, Roumen Konstantinov; and Hristov, Hristo Petkov, B360,910.

Diamond Shamrock Corporation: *See—*
Beckers, Norman L., B334,985.

Dickson, LeRoy D.: *See—*
Bowen, Arlen J.; Dickson, LeRoy D.; Goretzki, Jerome A.; Hendrickson, Kenneth E.; King, Donald P.; Kueper, Terrance W.; and Soderstrom, Ronald L., B382,783.

Dimroth, Peter. Quinazolone containing phenyl-pyridine compounds. B348,083, Cl. 260-154.000.

Dinges, Karl: *See—*
Schuster, Herbert; Huther, Edmund; Ott, Karl-Heinz; and Dinges, Karl, B256,936.

Dixon, Rolland E., to Phillips Petroleum Company. Process for making synthetic fuel gas from crude oil. B359,791, Cl. 48-211.000.

Dixon, William D.: *See—*
Eilrich, Gary L.; and Dixon, William D., B329,787.

Doane, William M.: *See—*
Trimnell, Donald; Shasha, Baruch S.; and Doane, William M., B391,184.

Dobreva-Dimitrova, Emilia: *See—*
Popov, Encho Nikolov; Diakov, Nikola Ganev; Dobreva-Dimitrova, Emilia; Apostolov, Roumen Konstantinov; and Hristov, Hristo Petkov, B360,910.

Doerner, William A., to du Pont de Nemours, E. I., and Company. Rotary heat engine powered refrigeration apparatus. B316,851, Cl. 62-499.000.

Dolney, Theodore J.: *See—*
Lynch, John P.; and Lynch, Delmar J., B430,798.

Domenico, Penelope B. 6-Fluoro-3,5-dihalo-2-pyridinols. B425,572, Cl. 260-297.00R.

Donaldson, Darrell J.; Drake, George L., Jr.; Beninate, John V.; Reeves, Wilson A.; and Daigle, Donald J., to United States of America, Agriculture. Flame proofing textile treading composition of tris(hydroxymethyl) phosphine-urea adduct and polyvinylbromide. B265,862, Cl. 260-29.6MN.

Dorlars, Alfons; and Schellhammer, Carl-Wolfgang, to Bayer Aktiengesellschaft. Triazoyl-naphthalimide brightening agents. B322,182, Cl. 260-281.000.

Dornheim, Gotz Gotmar: *See—*
Wandel, Martin; Salamon, Manfred; Dornheim, Gotz Gotmar; and Kuhlman, Bernard, B286,913.

Dow Chemical Company, The: *See—*
Basque, Max G.; Magner, James E.; Surls, Joseph P.; and West, Ben F., B336,978.
Wiggins, Glenn C.; Kreh, Marvin J.; and Davis, Robert S., B237,953.

Dow Corning Corporation: *See—*
Lee, Chi-Long; and Schulz, Jay R., B406,065.

Doyle, Alfred Michael; and Shear, William, to du Pont de Nemours, E. I., and Company. Controlling viscosity of chloroprene-sulfur copolymers. B324,505, Cl. 260-29.7SQ.

Drake, George L., Jr.: *See—*
Donaldson, Darrell J.; Drake, George L., Jr.; Beninate, John V.; Reeves, Wilson A.; and Daigle, Donald J., B265,862.

Dresser Industries, Inc.: *See—*
Martin, Paul Warren, B377,683.

Dresser, Thorpe: *See—*
Edison, Robert R.; and Dresser, Thorpe, B345,060.

Ducza, Lajos: *See—*
Mandzsu, Jozsef; Jagicza, Laszlo; Jodal Sandor; Ducza, Lajos; and Avarosi, Laszlo, B331,895.

Dunetz, Bryant R.; and Kronman, Seymour. Ballistic disc. B397,527, Cl. 102-92.100.

Dunham, James A.; Federle, August J.; and Sorbie, Thomas B. Container stabilizing apparatus. B442,859, Cl. 198-19.000.

Dunlop Holdings Limited: *See—*
French, Tom, B150,560.

Duo-Fast Corporation: *See—*
Avery, Hazelton H.; and Morabito, Salvatore, B367,812.

du Pont de Nemours, E. I., and Company: *See—*
Altschuler, Lili W., B351,590.
Baker, Melvin C., B414,129.
Bellina, Russell F., B369,607.
Bither, Tom Allen, Jr., B414,288.
Brown, Theodore E., Jr.; and Willis, Frank M., B417,299.
Cook, Homer Johnnie, B329,816.
Doerner, William A., B316,851.
Doyle, Alfred Michael; and Shear, William, B324,505.
Friend, Lindsay Carlton, B404,290.
Grot, Walther Gustav, B384,499.
Hodge, James Dwight, B256,334.
Holmes, David Alan, B412,619.
Jackson, Julius, B324,879.
Kane, William Paul, B281,943.
Khan, Ausat Ali, B468,198.
Kirchner, Jack R.; and Vaughan, Lawrence G., B323,127.
Leverett, Glenn Frederick, B324,503.
Logothetis, Anestis Leonidas, B233,741.
Mc Shane, Herbert Felix, Jr., B342,423.
Reese, Cecil E., B292,300.
Sandy, Charles A., B416,598.
Tarney, Robert Edward; and Verbanc, John Joseph, B324,495.
Turnbull, John William, B262,599.

Dym, Herbert, to International Business Machines Corporation. High resolution graphic data tablet. B343,577, Cl. 340-347.0NT.

Dyment, John Cameron; and Schwartz, Bertram, to Bell Telephone Laboratories, Incorporated. Surface passivation of GaAs junction laser devices. B292,126, Cl. 117-200.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Strunk, Manfred; Kroschel, Heinz; and Voss, Alfred, B387,039.

Eastman Kodak Company: *See—*
Damschroder, Rudolph E.; and Hughes, Donald J., B248,916.
Fleckenstein, Lee J.; and Figueras, John, B351,673.
Fowble, William F., B198,810.
Korosi, Matyas, B282,819.
Lidel, Darrel D., B313,029.
Millikan, Allan G.; and Brizee, Mary Jane W., B360,719.
Wylot, James Matthew; and Greco, Edgar Joseph, B286,499.

Eaton Corporation: *See—*
Obermaier, Frank E.; and Scott, Arthur A., B321,101.

Ebauches S. A.: *See—*
Meister, Rene; and Tyrode, Alain, B343,240.

Edison, Robert R.; and Dresser, Thorpe, to Atlantic Richfield Company. Separation of paraxylene. B345,060, Cl. 260-674.00A.

Edler, Bruno. Process for retreading a vehicle tyre. B329,612, Cl. 156-96.000.

Edstrom, Nils Herbert; Lindqvist, Stig Gustaf Wilhelm; and Sparrendahl, Gunnar Erik William, to Telefonaktiebolaget LM Ericsson. Method of transfer of switching order information for transmission of PCM words. B327,612, Cl. 179-15.0AT.

Eggington, Wilfred James, to Litton Systems, Inc. Air cushion vehicle cell having rigid base. B355,510, Cl. 180-121.000.

Eicher, Theo; Muller, Friedemann; and Krebs, Klaus-Werner, to Haarmann & Heimer GmbH. Tobacco and tobacco substitute materials including metal chelate compounds. B306,655, Cl. 131-2.000.

Eilrich, Gary L.; and Dixon, William D., to Monsanto Company. 2-Imino derivatives of substituted imidazoles. B329,787, Cl. 260-309.600.

Eisert, Manfred: *See—*
Schmeidl, Karl; Eisert, Manfred; and Riefel, Guenther, B321,938.

Elder Wilbert Corporation: *See—*
Andrus, Edward R., Jr.; Fahnstrom, Dale E.; Hansen, James G.; and Nichols, Charles E., B289,175.

Electroacustic GmbH Kiel: *See—*
Kuhn, Hans-Robert, B365,841.

Ellin, Seymour, to Polaroid Corporation. Adapter for use with a packaged flashlamp array. B383,465, Cl. 354-143.000.

Elresor SA: *See—*
Hetzel, Max, B366,589.

Eltra Corporation: *See—*
Horvath, Sandor J., B419,327.

Emery Industries, Inc.: *See—*
Hutchison, Robert B., B303,702.

Emhart Corporation: *See—*
Wythe, Frederick Joseph, B440,863.

Enders, Edgar: *See—*
Buchel, Karl Heinz; Frohberger, Paul-Ernst; Scheinpflug, Hans; and Enders, Edgar, B261,828.

Engelhardt, Friedrich: *See—*
Ribka, Joachim; Piesch, Steffen; Engelhardt, Friedrich; Pfeiffer, Gerhard; Klinke, Peter; and Schidlo, Wolfram, B408,487.

Ennenbach, Karl-Heinz: *See—*
Hausweiller, Arnold; Paris, Nikolaus; and Ennenbach, Karl-Heinz, B260,945.

Ennis, Thomas E., to GTE Automatic Electric Laboratories Incorporated. Method of static trimming of film deposited resistors. B346,210, Cl. 219-121.0LM.

Enomoto, Shigeo: *See—*
Moriyama, Itsuki; and Enomoto, Shigeo, B420,148.

Erdolchemie Gesellschaft mit beschrankter Haftung: *See—*
Hausweiller, Arnold; Paris, Nikolaus; and Ennenbach, Karl-Heinz, B260,945.
Erhardt, Klaus: *See—*
Petersen, Harro; Erhardt, Klaus; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenther, B314,800.
Ericsson, Rolf. Direct current power supply for manual arc welding. B352,445. Cl. 219-131.0WR.
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, to Hoechst Aktiengesellschaft. Process for the manufacture of acrylic acid. B393,347, Cl. 260-530.00N.
Ertingshausen, Gerhard; and Byrd, Diane F., to Union Carbide Corporation. Process for the determining of bilirubin in fluids. B314,977, Cl. 23-230.00B.
Eschler, Hans: *See—*
Goldmann, Gerd; and Eschler, Hans, B347,780.
Ewers, Josef: *See—*
Voges, Heinz-Werner; and Ewers, Josef, B280,015.
Exxon Production Research Company: *See—*
Howard, Willis W.; Maurer, William C.; and Lock, Everett H., B367,021.
Todd, William W.; Ilfrey, William T.; and Lloyd, James R., B390,679.
Exxon Research and Engineering Company: *See—*
Parker, Paul T.; and Mayer, Ivan, B383,581.
Factory Mutual Research Corporation: *See—*
Livingston, William L., B387,818.
Fahey, Darryl R., to Phillips Petroleum Company. Ruthenium complexes as catalysts for reduction of polyenes. B316,917, Cl. 260-666.00A.
Fahnstrom, Dale E.: *See—*
Andrus, Edward R., Jr.; Fahnstrom, Dale E.; Hansen, James G.; and Nichols, Charles E., B289,175.
Fallon, George William, III, to Combustion Engineering, Inc. Mist eliminator gas flow deflector. B430,106, Cl. 55-230.000.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
Buchel, Karl Heinz; Frohberger, Paul-Ernst; Scheinpflug, Hans; and Enders, Edgar, B261,828.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Bollert, Ulrich; Kleiner, Hans-Jerg; and Jakob, Franz, B390,738.
Von Der Eltz, Hans-Ulrich; Lehinant, Armand; and Maier, Hans-Peter, B336,902.
Fassel, Velmer A, both of: *See—*
Silva, Arthur P. D.; and Fassel, Velmer A, both of, B327,899.
Fassy, Henri; Lalet, Philippe; and Miletto, Andre, to Societe Aquitaine Total Organico. Adjuvant for improving the polymerisation of ethylene-hydrocarbons. B314,255, Cl. 260-92.80R.
Faulhaber, Gerhard: *See—*
Dachs, Karl; Faulhaber, Gerhard; Fikentscher, Rolf; Oppenlaender, Knut; and Schulze, Joachim, B259,274.
Fayling, Richard E., to Minnesota Mining and Manufacturing Company. Magnetic record medium authentication system. B356,602, Cl. 340-149.00A.
Federle, August J.: *See—*
Dunham, James A.; Federle, August J.; and Sorbie, Thomas B., B442,859.
Fein, Marvin M.: *See—*
Barabas, Eugene S.; and Fein, Marvin M., B312,477.
Feldbrugge, Alonzo H. R.; Rankowitz, Marshall M.; and Huste, Arno. Meat analog system. B395,496, Cl. 426-350.000.
Feldstein, Nathan, to RCA Corporation. Photomask bearing a pattern of metal plated areas. B319,339, Cl. 117-37.00R.
Feldstein, Nathan; and Weiner, Joel Alan, to RCA Corporation. Stabilized autocatalytic metal deposition paths. B415,113, Cl. 106-1.000.
Ferchland, Harold W., to General Motors Corporation. Assembly method for rotary engine. B413,546, Cl. 29-156.40R.
Fernandes, John Henry, to Combustion Engineering, Inc. Method of gasifying carbonaceous material. B375,220, Cl. 48-197.00R.
Fidler, Carl E.: *See—*
Orr, Robert S.; and Fidler, Carl E., B345,567.
Fielding, Herbert L.; and Liggero, Samuel H., to Polaroid Corporation. Multicolor screen element containing a hydrophilic colloid treated with a basic dye and zirconium acetate. B319,226, Cl. 96-76.00R.
Figueras, John: *See—*
Fleckenstein, Lee J.; and Figueras, John, B351,673.
Fikentscher, Rolf: *See—*
Dachs, Karl; Faulhaber, Gerhard; Fikentscher, Rolf; Oppenlaender, Knut; and Schulze, Joachim, B259,274.
Finkbeiner, Rudolf. Guide rod for feeding curtain suspenders into position. B354,889, Cl. 29-241.000.
Firestone Tire & Rubber Company, The: *See—*
Allcock, Harry Rex; and Gardner, James Earl, B350,219.
Fisch, Richard S.; and Newman, Norman, to Minnesota Mining and Manufacturing Company. Electrodialysis of fixer containing solutions. B391,509, Cl. 204-109.000.
Fisher, William Francis, to RCA Corporation. Automatic signal playback for film projectors. B405,137, Cl. 352-1.00D.
Fitch, Scott McDowell; Kolensky, Leo Michael; Panek, Joseph Conrad; Rife, David Charles; and Schaefer, Walter Rudolph, to Bell Telephone Laboratories, Incorporated. Data system multibranch junction circuit having branch line selection. B309,207, Cl. 340-147.00R.
Fitzgerald, John H.: *See—*
Green, Herbert; Guarino, Robert A.; and Fitzgerald, John H., B392,894.
Fitzgerald, Maurice J., to Polaroid Corporation. Synthetic silver halide emulsion binder. B320,452, Cl. 96-114.000.
Fjallbrant, Tore Torstensson. Demodulator. B387,363, Cl. 329-145.000.
Fleckenstein, Lee J.; and Figueras, John, to Eastman Kodak Company. Photographic diffusion transfer films, processes and compositions with color moiety releasing compound. B351,673, Cl. 96-3.000.
Fluet, Francis A.: *See—*
Lauer, Charles A.; and Fluet, Francis A., B392,696.
FMC Corporation: *See—*
Wright, Carl Leonard; and Beacham, Harry Hoyt, B420,514.
Foehr, Edward G., to Chevron Research Company. Demulsified extended life functional fluid. B329,476, Cl. 252-32.70E.
Fogelberg, Clement V.; and Kujave, John M., to Columbine Glass Company. Apparatus and method for improved glassware coating. B373,326, Cl. 65-60.000.
FOK-GYEM Finommechanikai es Elektronikus Muszergyarto Sz.: *See—*
Mandzsu, Jozsef; Jagicza, Laszlo; Jodal Sandor; Ducza, Lajos; and Avarosi, Laszlo, B331,895.
Fontaine, Louis: *See—*
Szarvasi, Etienne; and Fontaine, Louis, B379,172.
Ford Motor Company: *See—*
Augustin, Eugene H.; Johnson, Roger E.; and Rakestraw, Thomas L., B368,392.
Boller, Thomas E.; and Guerra, Salvatore, B357,402.
Forster, Gerhard; and Keller, Hans, to RCA Corporation. Voltage regulator for deflection circuit. B359,947, Cl. 315-389.000.
Fowble, William F., to Eastman Kodak Company. Method of coating a spliced web. B198,810, Cl. 117-34.000.
Fraik, Robert D., to Minnesota Mining and Manufacturing Company. Method of providing and developing hidden entries. B322,621, Cl. 117-107.000.
Franceschina, Louis E.; Haromy, Fred; and Kruppert, Frederick W., to Algoma Steel Corporation Limited, The. Device for inserting plugs in plug mill. B382,798, Cl. 72-209.000.
Francis, Robert L.: *See—*
Rouse, Paul L.; and Francis, Robert L., B330,828.
Francombe, Maurice H.: *See—*
Noreika, Alexander J.; and Francombe, Maurice H., B361,734.
Frankenberg, Henry E., to Continental Can Company, Inc. Bail ears for containers. B349,141, Cl. 224-45.00C.
Frant, Martin S.: *See—*
Riseman, John H.; Frant, Martin S.; and Krueger, John A., B349,231.
Franz, Helmut, to PPG Industries, Inc. Method of fabricating a fluorocarbon-filled multiple glazed window unit. B429,442, Cl. 65-24.000.
Frazen, Gustav; and Veltges, Helmut, to Palitex Project-Company GmbH. Apparatus for mounting portable manually operated yarn knotter mechanisms on yarn processing machines. B376,742, Cl. 57-34.00R.
Free, Dustin L.; and Phillips, Howard M. Reduction of water production from hydrocarbon containing subsurface formations. B251,345, Cl. 166-281.000.
Freiburger, Thomas William, to Deere & Company. Differential structure for preventing leakage of differential lock acutating fluid to the differential housing. B293,437, Cl. 74-710.500.
French, Tom, to Dunlop Holdings Limited. Pneumatic tires. B150,560, Cl. 152-330.000.
Friedebach, Adolph Hans, to Keegan Steel Fabricating Co., Inc. Laterally shiftable hitch with optional free moving coupler. B382,840, Cl. 280-456.00R.
Friend, Lindsay Carlton, to du Pont de Nemours, E. I., and Company. Daughter board contact. B404,290, Cl. 339-17.00M.
Frohberger, Paul-Ernst: *See—*
Buchel, Karl Heinz; Frohberger, Paul-Ernst; Scheinpflug, Hans; and Enders, Edgar, B261,828.
Froment, Daniel A.; Laurent, Henri; and Vilain, Victor A. Process of preparation of dichloride and methylthiophosphonic acid. B368,128, Cl. 260-543.00P.
Fujii, Seiji; Kamata, Masamoto; Ishida, Masayuki; and Kuwamoto, Hiroshi, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for shape control of metal products in continuous rolling mill. B341,579, Cl. 72-10.000.
Fukuda Denshi Co., Ltd.: *See—*
Okada, Hiroshi; Horibe, Hiroshi; Mizuno, Yasushi; Yasui, Shoji; Ikegaya, Kazuo; and Suzumura, Nobuo, B321,018.
Fukuda, Kenji: *See—*
Honkawa, Tadashi; and Fukuda, Kenji, B235,925.
Fukuda, Masaaki: *See—*
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, B393,163.
Fukuda, Yoshiharu; Onishi, Toshio; and Takeuchi, Akitoshi, to Onoda Cement Company, Ltd. Method of improving the grade of phosphoric acid by-product gypsum to be used as an inhibitor for cement. B366,402, Cl. 106-109.000.
Fukuhara, Akira, to Hitachi, Ltd. Holographic memory utilizing a changeable phase object and coherent subtraction. B398,551, Cl. 350-3.500.
Fukuyama, Kunihiko: *See—*
Nakamura, Kenji; Fukuyama, Kunihiko; and Yamamoto, Takuo, B354,145.
Furbeck, Warren R.: *See—*
Lee, Charles A.; and Furbeck, Warren R., B311,313.

Fuziwara, Yutaka: *See—*
Kushihashi, Akira; Fuziwara, Yutaka; and Akashi, Naotomo, B438,706.
Gaensslen, Fritz H.; and Krick, Paul J., to International Business Machines Corporation. Dynamic two device memory cell which provides D.C. sense signals. B319,402, Cl. 307-304.000.
Gaeth, Rudolf; Hoelscher, Friedrich; Schmitt, Bernard; and Blum, Dieter. Process for the production of sheet materials with reversible absorptivity for moisture. B320,261, Cl. 117-119.600.
GAF Corporation: *See—*
Barabas, Eugene S.; and Fein, Marvin M., B312,477.
Gaines, Marvin E.; and Swadner, Robert L., to General Motors Corporation. Radial compressor with muffled gas chambers and short stable piston skirts and method of assembling same. B416,933, Cl. 417-53.000.
Gall, Martin. 4-(2-Phenyl-o-totyl)-3,5-disubstituted-4h-1,2,4-triazoles. B387,761, Cl. 260-308.00R.
Galvani, Mary M. Fecal streptococcoci speciating media. B380,141, Cl. 195-100.000.
Gardner, Carl J., to United States of America, Army. Electronic counting fuze. B112,422, Cl. 102-70.20R.
Gardner-Denver Company: *See—*
Jameson, James J., B358,244.
Gardner, James Earl: *See—*
Allcock, Harry Rex; and Gardner, James Earl, B350,219.
Gaskell, Alfred J., to Pako Corporation. Liquid circulating system for photographic film processing tanks. B361,604, Cl. 354-321.000.
Gattuso, Marion. Rubber formulations. B400,293, Cl. 260-30.80R.
Gauterin, Charles Rowland; Parke, John Pedlow; and Storer, Christopher Charles, to Lever Brothers Company. Detergent composition. B388,298, Cl. 252-527.000.
Gautier, Jean-Pierre, to Societe Anonyme D.B.A. Seal and groove set for disc brake actuator. B350,843, Cl. 277-170.000.
Gehrmann, Klaus: *See—*
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, B393,347.
Gehweiler, William Frederick, to RCA Corporation. Complementary field-effect transistor amplifier. B365,834, Cl. 330-13.000.
Geier, Bernd, to Daimler-Benz Aktiengesellschaft. Installation for detachable fastening or rear seat cushions in passenger motor vehicles. B386,403, Cl. 297-440.000.
General Motors Corporation: *See—*
Bond, William D.; and Zemke, Bruce E., B394,188.
Brewster, Roger F., B409,657.
Burley, Harvey A., B406,800.
Chen, Stephen S., B415,977.
Ferchland, Harold W., B413,546.
Gaines, Marvin E.; and Swadner, Robert L., B416,933.
Heidorn, John Henry, B450,546.
Johnston, Ralph H.; and Lakey, Leroy E., B419,481.
Julian, Clarence L.; and Young, Robert E., B356,724.
Koivunen, Erkki A., B405,495.
Lindbert, Brook A.; Mertz, Edward H.; and Mc Collum, Wesley L., B309,499.
Murphy, Michael P., B412,867.
Robbins, Samuel B., B305,868.
Rose, Dale P., B424,572.
Siewert, Robert M., B282,390.
Yagiela, Frank D., B325,261.
General Tire & Rubber Company, The: *See—*
Benton, Richard E., B351,218.
Dekking, Henri G. G., B292,140.
Gerard, Bernard, to Rhone-Poulenc S.A. Improvement in the process for the preparation of thermosetting polymers from n,n-bismaleimide. B317,080, Cl. 260-78.0UA.
Gerritsma, Cornelis Jan: *See—*
Van Boxtel, Antonius Marinus; and Gerritsma, Cornelis Jan, B354,510.
Gerster, John F., to Minnesota Mining and Manufacturing Company. Method for treatment of bacterial plant disease. B344,479, Cl. 424-258.000.
Gestaldt International Limited: *See—*
Crawley, Barry G., B425,541.
Ghys, Theofiel Hubert: *See—*
Ohlschlager, Hans; Riester, Oskar; Ghys, Theofiel Hubert; Verhille, Karel Eugeen; and Vanheertum, Johannes Josephus, B342,886.
Giacopelli, Umberto, to Solvay & Cie. Electrolysis cell with vertical bipolar electrodes. B318,640, Cl. 204-256.000.
Gidick, Ward F. Reversing clutch. B394,300, Cl. 202-270.000.
Ginssky, Willard R., to United States of America, Air Force. Ammunition cook-off sensing and prevention system. B439,669, Cl. 89-12.000.
Giroux, Eugene L.: *See—*
Henkin, Robert I.; and Giroux, Eugene L., B354,098.
Gleason Works, The: *See—*
Pedersen, Harry; and White, Philip F., B391,437.
Glenn, Lewis A.; Lemcke, Bo; and Ryhming, Inge, to Institut Cerac SA. Nozzle means producing a high-speed liquid jet. B380,014, Cl. 239-589.000.
Glenn, Palmer S.: *See—*
Rideout, Walker H.; and Glenn, Palmer S., B315,397.
Glosek, John J.: *See—*
Dembiak, Matthew R.; and Glosek, John J., B455,775.
Gloss, Robert Andrew: *See—*
Nirschl, Joseph Peter; and Gloss, Robert Andrew, B305,417.
Godfrey, John Carl, to Bristol-Myers Company. Method for preparing sucrose composition containing chromium III salt. B262,378, Cl. 424-137.000.
Godfroid, Jean Jacques; and Thuillier, Jean Eugene, to C.E.R.P.H.A. (Centre European de Recherches Pharmacologiques). Phenoxyacetic acid derivatives as diuretic agents. B353,986, Cl. 424-275.000.
Goldinger, John A.; and Peterson, Dwight R., to PPG Industries, Inc. Method and apparatus for transferring articles from a conveyor. B440,898, Cl. 198-31.0AB.
Goldmann, Gerd; and Eschler, Hans, to Siemens Aktiengesellschaft. Device for recording and retrieving information in a holographic data storage system. B347,780, Cl. 340-173.0LM.
Goodfellow, Robert D., to Kennametal Inc. Raise boring head and rolling cutter arrangement therefor. B300,353, Cl. 175-364.000.
Gooding, Elwyn R. Chin cup and chin strap for protective headgear. B353,317, Cl. 2-3.00R.
Goodwin, Bertram R., to American Optical Corporation. Lens surfacing pads and method of making the same. B359,825, Cl. 51-395.000.
Goretzki, Jerome A.: *See—*
Bowen, Arlen J.; Dickson, LeRoy D.; Goretzki, Jerome A.; Hendrickson, Kenneth E.; King, Donald P.; Kueper, Terrance W.; and Soderstrom, Ronald L., B382,783.
Gorog, Istvan: *See—*
Carlson, Curtis Raymond; Gorog, Istvan; and Heyman, Philip Michael, B445,471.
Gotsmann, Guenther: *See—*
Schwarzmann, Matthias; Gotsmann, Guenther; Heinze, Peter; and Pommer, Ernst Heinrich, B129,999.
Graco Inc.: *See—*
Petrovic, John E., B450,927.
Grammatica, Steven James: *See—*
Bergfjord, John Alf; Grammatica, Steven James; and Radler, Richard William, B337,787.
Graves, Kenneth E.: *See—*
Porter, Lawrence C.; and Graves, Kenneth E., B294,673.
Greco, Edgar Joseph: *See—*
Wylot, James Matthew; and Greco, Edgar Joseph, B286,499.
Green, Herbert; Guarino, Robert A.; and Fitzgerald, John H., to United Aircraft Corporation. Hybrid filter employing digital techniques and analog components and amti radar employing same. B392,894, Cl. 343-7.700.
Greenwood, Arthur R.; Heinze, Walter W.; Schnitta, Edward; and Andrejasich, Frank H. Ring-flanged slip-joint for a reactor system. B356,253, Cl. 23-288.00G.
Grier, John D.: *See—*
Camp, Harold E.; and Grier, John D., B340,212.
Griffin, Roger Thomas, to RCA Corporation. Peak voltage detector circuits. B389,726, Cl. 207-235.00A.
Gritzner, Gerhard. Operation of a diaphragm electrolylytic cell for producing chlorine including feeding an oxidizing gas having a regulated moisture content to the cathode. B361,743, Cl. 204-98.000.
Gritzner, Gerhard. Operation of a cation exchange membrane electrolytic cell for producing chlorine including feeding an oxidizing gas having a regulated moisture content to the cathode. B361,744, Cl. 204-98.000.
Grohe, Klaus, to Bayer Aktiengesellschaft. Certain 2-oxo-4-thiazoline-5-carboxylic acid esters. B271,104, Cl. 260-306.70R.
Groom, Nelson J.: *See—*
Anderson, Willard W.; and Groom, Nelson J., B384,773.
Grossi, Oscar, to Cogne Macchine Tissili Cognetex S.p.A. Thread suction tube connection. B424,748, Cl. 57-34.500.
Grot, Walther Gustav, to du Pont de Nemours, E. I., and Company. Method of making laminates of support material and fluorinated polymer containing pendant side chains containing sulfonyl groups. B384,499, Cl. 156-213.000.
Grove, Robert H.: *See—*
Dahlberg, John R.; and Grove, Robert H., B422,949.
GTE Automatic Electric Laboratories Incorporated: *See—*
Ennis, Thomas E., B346,210.
GTE Sylvania Incorporation: *See—*
Collins, Floyd K.; and Miller, John J., B393,970.
Guarino, Robert A.: *See—*
Green, Herbert; Guarino, Robert A.; and Fitzgerald, John H., B392,894.
Guerra, Salvatore: *See—*
Boller, Thomas E.; and Guerra, Salvatore, B357,402.
Gulf Research & Development Company: *See—*
Harper, Earl F.; and Williamson, Roger C., B366,790.
Harper, Earl F.; and Williamson, Roger C., B366,861.
Onopchenko, Anatoli; and Schulz, Johann G. D., B316,422.
Gunnarsson Ek, Klas Goran: *See—*
Horlin, Dick Axel; and Gunnarsson Ek, Klas Goran, B286,614.
Gurtler, Peter. Disperse dye concentrate with sawdust. B291,104, Cl. 8-91.000.
Guzman, Adolfo M.; and Lawes, Harlan D., to International Business Machines Corporation. Capstan motor having a ceramic output shaft and an adhesively attached capstan. B389,295, Cl. 310-75.000.
Haarmann & Heimer GmbH: *See—*
Eicher, Theo; Muller, Friedemann; and Krebs, Klaus-Werner, B306,655.
Haas, James Lynn. Method of making an integral skin foamed product wherein portions of the skin are of greater densities. B223,621, Cl. 264-45.000.
Haase, Jaroslav. Polyacrylonitrile basic dyeing process with anionic assistant. B314,489, Cl. 8-169.000.

Haddock, Ernest; and Hopwood, William J. Phenyl ketoxime derivatives. B211,786, Cl. 260-553.00A.
Hadeishi, Tetsuo, to United States of America, Atomic Energy Commission. Zeeman effect absorption spectrometer. B442,280, Cl. 356-51.000.
Haeusler, Jochen, to Siemens Aktiengesellschaft. Electronic computer for the static recognition of the divisibility, and the division of, numbers divisible by three, six and nine. B355,595, Cl. 235-159.000.
Hagar, James L.; and Schwartz, Harold E., Jr., to Mobil Oil Corporation. Automatic data retrieval system for pumping wells. B381,847, Cl. 340-172.500.
Hajek, James D.; Krizak, Eugene J.; and McReynolds, Earl E. Liquid redistributor for a fractionating column. B343,506, Cl. 261-97.000.
Halko, Richard A.: *See—*
Moreau, James O.; and Halko, Richard A., B369,563.
Halliburton Company: *See—*
Sutton, Gary D., B359,946.
Hamada, Hideo: *See—*
Ookubo, Takashi; and Hamada, Hideo, B382,290.
Hamamoto, Hiroshi: *See—*
Umehara, Hanji; Kimura, Takashi; and Hamamoto, Hiroshi, B318,195.
Hamilton, John; and Medlock, Leslie Ernest, to Imperial Chemical Industries Limited. Bursting disc assembly. B359,540, Cl. 169-28.000.
Han, Swan Bing, to Bell-Northern Research Ltd. Error detector for pseudo-random sequence of digits. B394,088, Cl. 340-146.10E.
Hane, Toshihide: *See—*
Sasabe, Kaoru; Kotera, Hiroaki; Hane, Toshihide; and Kihara, Nobuyoshi, B344,203.
Hansen, James G.: *See—*
Andrus, Edward R., Jr.; Fahnstrom, Dale E.; Hansen, James G.; and Nichols, Charles E., B289,175.
Hardenbicker, Herbert: *See—*
Jores, Willi; Hoffacker, Franz; Kreit, Bernhardt; Lehmann, Helmut; and Hardenbicker, Herbert, B396,551.
Hargest, Thomas S. Method for lymphocyte depletion. B302,271, Cl. 128-214.00R.
Hargreaves, James Roger: *See—*
Harris, Arthur; Burrows, John; and Hargreaves, James Roger, B265,369.
Haromy, Fred: *See—*
Franceschina, Louis E.; Haromy, Fred; and Kruppert, Frederick W., B382,798.
Harper, Earl F.; and Williamson, Roger C., to Gulf Research & Development Company. Process for preparing cumene. B366,790, Cl. 260-671.00P.
Harper, Earl F.; and Williamson, Roger C., to Gulf Research & Development Company. Process for preparing cumene. B366,861, Cl. 260-671.00P.
Harper, Ernest A., to Phillips Petroleum Company. Removal of moisture from a natural gas stream by contacting with a liquid desiccant-antifreeze agent and subsequently chilling. B421,383, Cl. 62-20.000.
Harrington, Joseph Kenneth; and Trepka, Robert D., to Minnesota Mining and Manufacturing Company. N-(furanylmethyl) fluoroalkanesulfonamides. B378,621, Cl. 260-347.200.
Harris, Allan E., to Harris-Hub Co., Inc. Bed frame member. B399,292, Cl. 5-286.000.
Harris, Arthur; Burrows, John; and Hargreaves, James Roger. Corrosion inhibiting composition containing an aminoalkyl phosponic acid and an inorganic nitrite. B265,369, Cl. 252-389.00A.
Harris-Hub Co., Inc.: *See—*
Harris, Allan E., B399,292.
Harris, Stephen E. Two-photon pumped frequency converter and method. B437,195, Cl. 307-88.300.
Hashiguchi, Susumu: *See—*
Hino, Tetsuo; and Hashiguchi, Susumu, B370,453.
Hashimoto, Masafumi: *See—*
Ono, Takuhiro; and Hashimoto, Masafumi, B361,265.
Hasker, Jan; and De Klerr, Jacobus Johannes Maria Joseph, to U.S. Philips Corporation. Electron gun with grid and anode having orthogonal elongated apertures. B381,074, Cl. 313-448.000.
Hatano, Hiroshi: *See—*
Yoshino, Hirokazu; Yamaguchi, Tetsuo; Tsuboka, Eiichi; and Hatano, Hiroshi, B262,287.
Haupt, Robert C., to Allis-Chalmers Corporation. Removable side panel. B327,674, Cl. 180-69.00R.
Hausler, Rudolf H. Prevention of corrosion. B336,129, Cl. 203-7.000.
Hausweiller, Arnold; Paris, Nikolaus; and Ennenbach, Karl-Heinz, to Erdolchemie Gesellschaft mit beschrankter Haftung. Process for preparing an iron containing catalyst. B260,945, Cl. 252-437.000.
Hay, Robert A., II. Method and apparatus for construction of a spirally generated structure. B302,836, Cl. 156-192.000.
Hayami, Heijiro: *See—*
Sasabe, Kaoru; Okino, Yoshihiro; and Hayami, Heijiro, B239,289.
Haynes, Harold L.: *See—*
Morrison, Albert R.; Haynes, Harold L.; and Bell, Reuben Hays, B319,414.
Healy, Robert Michael, to Litton Systems, Inc. Vapor degreasing system. B371,836, Cl. 134-31.000.
Hebert, Arthur J. Scale tester. B401,133, Cl. 73-1.00B.
Hegler, Wilhelm. Apparatus for manufacturing of partitioned plastic tubing. B274,945, Cl. 425-326.00B.
Heidorn, John Henry, to General Motors Corporation. Vehicle air conditioning control. B450,546, Cl. 62-158.000.
Heimsch, Robert A.; and Reaville, Eric T., to Monsanto Company. Light sensitive compositions and products. B415,845, Cl. 96-35.100.
Heinze, Peter: *See—*
Schwarzmann, Matthias; Gotsmann, Guenther; Heinze, Peter; and Pommer, Ernst Heinrich, B129,999.
Heinze, Walter W.: *See—*
Greenwood, Arthur R.; Heinze, Walter W.; Schnitta, Edward; and Andrejasich, Frank H., B356,253.
Hendrichon, Lucien. Trail scraper. B351,535, Cl. 172-146.000.
Hendrickson, Kenneth E.: *See—*
Bowen, Arlen J.; Dickson, LeRoy D.; Goretzki, Jerome A.; Hendrickson, Kenneth E.; King, Donald P.; Kueper, Terrance W.; and Soderstrom, Ronald L., B382,783.
Henkel & Cie GmbH: *See—*
Rose, David; and Lepper, Herbert, B270,089.
Henkin, Robert I.; and Giroux, Eugene L. Isolation and purification of active principle of fruit of synsepalum dulcificum. B354,098, Cl. 424-195.000.
Henrick, Clive A.; and Staal, Gerardus B., to Zoicon Corporation. Cyclopropylmethyl Esters. B350,708, Cl. 260-485.00L.
Hess, Hans; Mueller, Guenther; and Buehlmann, Xaver. Process for preparing plant enzyme preparations of low germ content. B266,195, Cl. 195-66.00R.
Hesse, Jurgen: *See—*
Schmidt, Jurgen; and Hesse, Jurgen, B311,910.
Hetzel, Max, to Elresor SA. Band-pass filter and method of making same. B366,589, Cl. 333-71.000.
Heugebaert, Frans Clement: *See—*
Poot, Albert Lucien; Heugebaert, Frans Clement; Janssens, Wilhelmus; and Vandenberghe, Antoon Leon, B335,670.
Heyman, Philip Michael: *See—*
Carlson, Curtis Raymond; Gorog, Istvan; and Heyman, Philip Michael, B445,471.
Heytmeijer, Herman R.: *See—*
Demarest, Donald J.; and Heytmeijer, Herman R., B345,390.
Hickner, Richard Allan: *See—*
Sorenson, Marius Walter; Whiteside, Ross Clinton; and Hickner, Richard Allan, B363,205.
Hicks, Darrell D.: *See—*
Carlos, Donald D.; and Hicks, Darrell D., B415,847.
Hicks, Mearle G.: *See—*
Brumleve, Thomas D.; Hicks, Mearle G.; and Jones, Milton O., B381,632.
Hill Acme Company, The: *See—*
Kurtz, Albert L., B389,327.
Hillegas, William J.: *See—*
Berkes, John S.; Hillegas, William J.; and Ing, Samuel W., B283,124.
Hino, Tetsuo; and Hashiguchi, Susumu. Magnetic recording disc. B370,453, Cl. 360-99.000.
Hitachi Electronics Ltd.: *See—*
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, B393,163.
Hitachi, Ltd.: *See—*
Ashikawa, Mikio; and Takemoto, Iwao, B328,391.
Fukuhara, Akira, B398,551.
Iwasaka, Tatsuo; Inuzuka, Isao; Nakamura, Minoru; Yuminaka, Takeo; and Morita, Masanobu, B341,322.
Kadotani, Kenzo; Honda, Tatuo; and Isogai, Tokio, B293,378.
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, B393,163.
Waniishi, Kenji; and Ninomiya, Koichiro, B290,328.
Hittmair, Paul: *See—*
Nitzsche, Siegfried; Hittmair, Paul; Wohlfarth, Ernst; and Louis, Eckhart, B397,027.
Hodge, James Dwight, to du Pont de Nemours, E. I., and Company. Hollow filament spinneret. B256,334, Cl. 425-461.000.
Hoechst Aktiengesellschaft: *See—*
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, B393,347.
Hoelscher, Friedrich: *See—*
Gaeth, Rudolf; Hoelscher, Friedrich; Schmitt, Bernard; and Blum, Dieter, B320,261.
Hoffacker, Franz: *See—*
Jores, Willi; Lehmann, Helmut; and Hoffacker, Franz, B352,965.
Jores, Willi; Hoffacker, Franz; Kreit, Bernhardt; Lehmann, Helmut; and Hardenbicker, Herbert, B396,551.
Hoffmann-La Roche Inc.: *See—*
Cekoric, Thomas, Jr.; and Yananton, Patrick Michael, B400,080.
Stein, Stanley, B409,220.
Holden, Abe N., to Westinghouse Electric Corporation. Ceramic-lined combustion chamber and means for support of a liner with combustion air penetrations. B377,172, Cl. 60-39.650.
Holman, Benedictus Timotheus Johannes. Gauze supply conductor in coil unit for a television camera tube. B461,872, Cl. 315-8.000.
Holmes, David Alan, to du Pont de Nemours, E. I., and Company. Polytetrafluoroethylene aqueous dispersions which provide coatings of improved gloss. B412,619, Cl. 260-29.60F.
Holz, Norbert J.: *See—*
Holz, Orville H., Sr.; and Holz, Norbert J., B359,740.
Holz, Orville H., Jr.: *See—*
Holz, Orville H., Sr.; and Holz, Norbert J., B359,740.

Holz, Orville H., Sr.; and Holz, Norbert J., to Holz, Orville H., Jr., a part interest. Ride-type surface-working machines. B359,740, Cl. 404-112.000.
Honda, Tatuo: *See—*
Kadotani, Kenzo; Honda, Tatuo; and Isogai, Tokio, B293,378.
Honkawa, Tadashi; and Fukuda, Kenji. Spectrophotometer for use as a split beam and dual wavelength measurements. B235,925, Cl. 356-73.000.
Hopwood, William J.: *See—*
Haddock, Ernest; and Hopwood, William J., B211,786.
Horibe, Hiroshi: *See—*
Okada, Hiroshi; Horibe, Hiroshi; Mizuno, Yasushi; Yasui, Shoji; Ikegaya, Kazuo; and Suzumura, Nobuo, B321,018.
Horlin, Dick Axel; and Gunnarsson Ek, Klas Goran, to Atlas Copco Aktiebolag. Method and device for dust collecting air-flushed rock drilling. B286,614, Cl. 175-209.000.
Horvath, Sandor J., to Eltra Corporation. Direct current power converter. B419,327, Cl. 321-18.000.
Houlihan, William J.; and Nadelson, Jeffrey. 10-(2-Dialkylaminoethyl)-10,11-Dihydro, or 10-(2-Dialkylaminoethyl)-5-Methylene-2,7-Substituted or Unsubstituted-5H-Dibenzo[a,d]Cycloheptenes. B224,323, Cl. 260-570.8TC.
Howard, Anthony, to Xerox Corporation. Sorting apparatus. B339,675, Cl. 271-173.000.
Howard, Willis W.; Maurer, William C.; and Lock, Everett H., to Exxon Production Research Company. Pump alarm system. B367,021, Cl. 340-242.000.
Howell, Hilda; and Kutz, Walter M., to Koppers Company, Inc. Self-extinguishing polymer compositions containing brominated aryl butanes. B403,996, Cl. 260-649.00R.
Howell, Thomas J. Polymerization of caprolactam. B279,583, Cl. 260-78.00L.
Hristov, Hristo Petkov: *See—*
Popov, Encho Nikolov; Diakov, Nikola Ganev; Dobreva-Dimitrova, Emilia; Apostolov, Roumen Konstantinov; and Hristov, Hristo Petkov, B360,910.
Hughes Aircraft Company: *See—*
Berry, Robert L.; and Dehne, Axel G., B447,417.
Hughes, Donald J.: *See—*
Damschroder, Rudolph E.; and Hughes, Donald J., B248,916.
Hulse, George E.; and Kersting, R. James. Poly(p-benzenesulfonamide). B382,018, Cl. 260-79.30R.
Hundertmark, James M., to Brunswick Corporation. Fuel pump. B416,832, Cl. 417-395.000.
Huskins, Chester W., to United States of America, Army. Propellant with mixed carboxyl polybutadiene and carboranyl methacrylate-butadiene-acrylic acid terpolymer as bonder. B024,017, Cl. 149-19.200.
Huskins, Chester W., to United States of America, Army. Terpolymer-butadiene-carboranyl methacrylate, and acrylic acid. B024,018, Cl. 260-80.700.
Huste, Arno: *See—*
Feldbrugge, Alonzo H. R.; Rankowitz, Marshall M.; and Huste, Arno, B395,496.
Hutchison, Robert B., to Emery Industries, Inc. Useful wax compositions. B303,702, Cl. 106-268.000.
Huther, Edmund: *See—*
Schuster, Herbert; Huther, Edmund; Ott, Karl-Heinz; and Dinges, Karl, B256,936.
Hutner, Mark A. Selective fusing. B345,384, Cl. 219-216.000.
Hutton, Wilfred H.: *See—*
Clasper, Thomas; Hutton, Wilfred H.; Kessinger, Orville E., Jr.; Randour, Victor; and Simpson, Fred E., B373,428.
Hyatt, David Ernest, to Stauffer Chemical Company. Production of chlorofluorocarbons. B023,046, Cl. 260-653.700.
ICI United States Inc.: *See—*
Broughton, Clifton William; and Truemper, Joseph Tucker, B310,271.
Kuehn, Erich, B364,910.
Iizuka, Haruhiko; and Takeuchi, Yasuhisa. Skid control system. B416,834, Cl. 303-21.0BE.
Ikegaya, Kazuo: *See—*
Okada, Hiroshi; Horibe, Hiroshi; Mizuno, Yasushi; Yasui, Shoji; Ikegaya, Kazuo; and Suzumura, Nobuo, B321,018.
Ilfrey, William T.: *See—*
Todd, William W.; Ilfrey, William T.; and Lloyd, James R., B390,679.
Illinois Tool Works, Inc.: *See—*
Olsen, Robert C., B357,057.
Imai, Fukashi; and Morozumi, Yukio. Method of doping a polycrystalline silicon layer. B365,371, Cl. 148-188.000.
Imperial Chemical Industries Limited: *See—*
Bengtson, Olle, B176,995.
Burgess, Robin Henry; and Tomlinson, Richard William, B415,124.
Hamilton, John; and Medlock, Leslie Ernest, B359,540.
Inaba, Shigeho; Takahashi, Kei; Yamamoto, Michihiro; Mori, Kazuo; Ishizumi, Kikuo; and Yamamoto, Hisao, to Sumitomo Chemical Company, Ltd. 2(1H)-quinazolinones and process therefor. B252,947, Cl. 260-251.0QB.
Inazumi, Tadahiro: *See—*
Shimada, Shunsaku; and Inazumi, Tadahiro, B420,568.
Industrial Pirelli S. p. A.: *See—*
Caretta, Renato, B287,275.
Tangorra, Giorgio; Bertelli, Italo; and Calori, Giovanni, B364,334.
Ing, Samuel W.: *See—*
Berkes, John S.; Hillegas, William J.; and Ing, Samuel W., B283,124.
Ingle, James Flagg, to Bell Telephone Laboratories, Incorporated. Digital readout for displaying both long term and short term average values of a signal. B351,493, Cl. 340-336.000.
Institut Cerac SA: *See—*
Glenn, Lewis A.; Lemcke, Bo; and Ryhming, Inge, B380,014.
Instrumentation Specialties Company: *See—*
Allington, William B., B411,145.
International Business Machines Corporation: *See—*
Beckerman, Martin; Murphy, John A.; Orlandi, John V.; and Smith, George W., B351,672.
Bowdle, Raymond Ralph; and Laybourn, Robert Junior, B284,297.
Bowen, Arlen J.; Dickson, LeRoy D.; Goretzki, Jerome A.; Hendrickson, Kenneth E.; King, Donald P.; Kueper, Terrance W.; and Soderstrom, Ronald L., B382,783.
Caricchio, Jerome J., Jr.; Saxenmeyer, George J., Jr.; and York, Edward R., B450,499.
Chang, Hsu; Chen, Tien Chi; and Tung, Chin, B351,665.
Dym, Herbert, B343,577.
Gaensslen, Fritz H.; and Krick, Paul J., B319,402.
Guzman, Adolfo M.; and Lawes, Harlan D., B389,295.
Patti, Michael Joseph, B394,712.
Thompson, David A., B371,787.
International Harvester Company: *See—*
Rouse, Paul L.; and Francis, Robert L., B330,828.
Wendling, John E., B323,191.
International Paper Company: *See—*
Lee, Charles A.; and Furbeck, Warren R., B311,313.
Lee, Charles A.; and Sorrells, Frank D., B313,594.
International Telephone and Telegraph Corporation: *See—*
Orthuber, Richard Kaspar, B395,478.
Inuzuka, Isao: *See—*
Iwasaka, Tatsuo; Inuzuka, Isao; Nakamura, Minoru; Yuminaka, Takeo; and Morita, Masanobu, B341,322.
Ishida, Masayuki: *See—*
Fujii, Seiji; Kamata, Masamoto; Ishida, Masayuki; and Kuwamoto, Hiroshi, B341,579.
Ishii, Hajime; Bannai, Nubuo; and Nishita, Sadao. Shaped articles of polyvinylidene fluoride. B291,694, Cl. 260-92.100.
Ishii, Katsutoshi: *See—*
Tatsumi, Youji; Ito, Shohei; and Ishii, Katsutoshi, B325,102.
Ishizawa, Seiya: *See—*
Ishizawa, Toushichi; and Ishizawa, Seiya, B358,311.
Ishizawa, Toushichi; and Ishizawa, Seiya. Method of heat treating saw. B358,311, Cl. 148-147.000.
Ishizumi, Kikuo: *See—*
Inaba, Shigeho; Takahashi, Kei; Yamamoto, Michihiro; Mori, Kazuo; Ishizumi, Kikuo; and Yamamoto, Hisao, B252,947.
Isogai, Tokio: *See—*
Kadotani, Kenzo; Honda, Tatuo; and Isogai, Tokio, B293,378.
Ito, Shohei: *See—*
Tatsumi, Youji; Ito, Shohei; and Ishii, Katsutoshi, B325,102.
Iwai, Yoshihiro; and Tanaka, Kunihiko, to Nippon Hoso Kyokai. Apparatus for photographing animation films. B349,177, Cl. 352-87.000.
Iwasaka, Tatsuo; Inuzuka, Isao; Nakamura, Minoru; Yuminaka, Takeo; and Morita, Masanobu, to Hitachi, Ltd. Elevator signal device. B341,322, Cl. 340-19.00R.
Iwasaki Tsushinki Kabashiki Kaisha (a/k/a) Iwatsu Electric Co., Ltd.: *See—*
Nakaya, Naohisa, B309,681.
J. M. Huber Corporation: *See—*
Aboytes, Peter, B251,109.
Aboytes, Peter, B251,635.
Jackson, Arnel Edmund; and Singer, George Anthony, to RCA Corporation. Signal sensing for film projectors. B405,136, Cl. 352-10.000.
Jackson, Harold W. Circuit to raise a quantity to a predetermined power. B428,177, Cl. 307-229.000.
Jackson, Julius, to du Pont de Nemours, E. I., and Company. Primrose chrome yellow pigment and process for its preparation. B324,879, Cl. 106-298.000.
Jagicza, Laszlo: *See—*
Mandzsu, Jozsef; Jagicza, Laszlo; Jodal Sandor; Ducza, Lajos; and Avarosi, Laszlo, B331,895.
Jakob, Franz: *See—*
Bollert, Ulrich; Kleiner, Hans-Jerg; and Jakob, Franz, B390,738.
Jameson, James J., to Gardner-Denver Company. Multispeed power transmission with plural countershafts. B358,244, Cl. 74-360.000.
Janssens, Wilhelmus: *See—*
Poot, Albert Lucien; Heugebaert, Frans Clement; Janssens, Wilhelmus; and Vandenberghe, Antoon Leon, B335,670.
Jenke, Dieter: *See—*
Schmoll, Heinz; and Jenke, Dieter, B364,241.
Jenoptik Jena G.m.b.H.: *See—*
Winter, Ernst, B320,603.
Jensen, Fred C., to Park-Ohio Industries, Inc. Apparatus for inductively heating the bearing surfaces of a crankshaft. B420,016, Cl. 219-10.570.
Jepson, Bernhart E., to United States of America, Atomic Energy Commission. Method for separating isotopes. B322,564, Cl. 423-2.000.
Jeromin, Lothar S., to Xerox Corporation. Apparatus for developing latent electrostatic images. B323,666, Cl. 118-637.000.

Jobe, John D. Monitor for detecting surfactants in liquid petroleum products. B351,735, Cl. 73-61.10R.
Jodal Sandor: *See—*
Mandzsu, Jozsef; Jagicza, Laszlo; Jodal Sandor; Ducza, Lajos; and Avarosi, Laszlo, B331,895.
Johnson, Harlan B., to PPG Industries, Inc. Diaphragm cell having a tube bundle cathode. B388,701, Cl. 204-258.000.
Johnson, Roger E.: *See—*
Augustin, Eugene H.; Johnson, Roger E.; and Rakestraw, Thomas L., B368,392.
Johnston, James V., to United States of America, Army. Digital pulse rebalance accelerometer. B385,210, Cl. 73-516.00R.
Johnston, Ralph H.; and Lakey, Leroy E., to General Motors Corporation. Electrically controlled fuel pump. B419,481, Cl. 417-220.000.
Jones, Bernard Howard: *See—*
Bartlow, David H.; Jones, Bernard Howard; and Pearson, Lee E., B288,638.
Jones, Marvin L.; and Booth, David W., to United States of America, Army. Propellant with very high burning rate acrylate polymer binder and NF plasticizer. B287,164, Cl. 149-19.200.
Jones, Milton O.: *See—*
Brumleve, Thomas D.; Hicks, Mearle G.; and Jones, Milton O., B381,632.
Jones, Rufus S. Process for preparing wholly aromatic polyamides in the presence of an aryl sulfone. B360,208, Cl. 260-78.00R.
Jores, Willi; Lehmann, Helmut; and Hoffacker, Franz, to Agfa-Gevaert Aktiengesellschaft. Winding shaft with variable torque. B352,965, Cl. 242-56.900.
Jores, Willi; Hoffacker, Franz; Kreit, Bernhardt; Lehmann, Helmut; and Hardenbicker, Herbert, to Agfa-Gevaert Aktiengesellschaft. Automatic band-winding machine. B396,551, Cl. 242-76.000.
Jos. F. Lamb, Company: *See—*
Skrentner, Frank C., B305,597.
Josey, Alden Dwayne; and Kirchner, Jack Robert. Substituted 1,3,7-octatrienes and their preparation. B409,026, Cl. 260-677.00R.
Julian, Clarence L.; and Young, Robert E., to General Motors Corporation. Vacuum control assembly. B356,724, Cl. 123-117.00A.
Just, George E.; and Simonovitch, Chaim. Intermediates for producing prostaglandins. B281,341, Cl. 260-247.000.
Justice, James W. H., to Westinghouse Electric Corporation. Transmission system for audio and coding signals in educational tv. B364,163, Cl. 178-5.600.
Kabushiki Kaisha Toyota: *See—*
Umehara, Hanji; Kimura, Takashi; and Hamamoto, Hiroshi, B318,195.
Kadotani, Kenzo; Honda, Tatuo; and Isogai, Tokio, to Hitachi, Ltd. Method for forming epoxy resin products. B293,378, Cl. 260-37.0EP.
Kafka, William L.: *See—*
Thomas, David F.; and Kafka, William L., B405,938.
Kain, Calvin L. Protective hub cap for bicycles. B401,992, Cl. 301-108.0SC.
Kaiser, Rudolf. Flame ionization detector. B418,121, Cl. 23-254.0EF.
Kalfayan, Sarkis H.: *See—*
United States of America, National Aeronautics and Space Administration; Silver, Robert H.; and Kalfayan, Sarkis H., B382,261.
Kamata, Masamoto: *See—*
Fujii, Seiji; Kamata, Masamoto; Ishida, Masayuki; and Kuwamoto, Hiroshi, B341,579.
Kane, William Paul, to du Pont de Nemours, E. I., and Company. Method of cooking food in a polythylene terephthalate/paperboard laminated container. B281,943, Cl. 426-523.000.
Kansy, Robert; and Culton, Jon, to University of Illinois Foundation. Variable delay device. B430,149, Cl. 333-30.00R.
Karlen, Bo Lennart: *See—*
Dahlbom, Johan Richard; Karlen, Bo Lennart; and Lindgren, Sune Gunnar, B306,829.
Karlfors, Johannes: *See—*
Brannstrom, Kurt Osten; and Karlfors, Johannes, B368,081.
Kasai, Yujiro: *See—*
Kodama, Koji; and Kasai, Yujiro, B345,527.
Kasperkovitz, Wolfdietrich George. Sensor provided with a pick-up panel. B334,868, Cl. 178-7.100.
Kasselmann, John T.; Colpaert, James J.; and Burnett, Richard T., to Bendix Corporation, The. Pressure differential trailer braking system. B400,310, Cl. 303-7.000.
Katz, Saul N. Coffee extraction process. B356,032, Cl. 426-434.000.
Katzschmann, Ewald, to Chemische Werke Witten GmbH. Process for the preparation of terephthalic acid. B178,475, Cl. 260-525.000.
Kayano, Tatsuo: *See—*
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, B393,163.
Keegan Steel Fabricating Co., Inc.: *See—*
Friedebach, Adolph Hans, B382,840.
Keller, Hans: *See—*
Forster, Gerhard; and Keller, Hans, B359,947.
Kelly, Robert C., to Upjohn Company, The. Oxazelidine of endo-bicyclo-[3.1.0]hex-2-ene-6-carboxaldehyde. B315,363, Cl. 260-307.00F.
Kennametal Inc.: *See—*
Goodfellow, Robert D., B300,353.
Kersting, R. James: *See—*
Hulse, George E.; and Kersting, R. James, B382,018.
Kessinger, Orville E., Jr.: *See—*
Clasper, Thomas; Hutton, Wilfred H.; Kessinger, Orville E., Jr.; Randour, Victor; and Simpson, Fred E., B373,428.
Ketchow, Doris Rahb, to Bell Telephone Laboratories, Incorporated. Germanium doped gaas layer as an ohmic contact. B421,026, Cl. 357-63.000.
Keyl, Erwin; Ruthe, Helmut; and Thiele, Gerd, to Siemens Aktiengesellschaft. Converter arrangement. B432,424, Cl. 321-8.00C.
Khan, Ausat Ali, to du Pont de Nemours, E. I., and Company. Preparation of sol chloroprene polymers. B468,198, Cl. 260-92.300.
Kieffer, Vernon E. Interpole loop control device for coil winding machines. B441,024, Cl. 140-92.100.
Kihara, Nobuyoshi: *See—*
Sasabe, Kaoru; Kotera, Hiroaki; Hane, Toshihide; and Kihara, Nobuyoshi, B344,203.
Kimura, Takashi: *See—*
Umehara, Hanji; Kimura, Takashi; and Hamamoto, Hiroshi, B318,195.
King, Donald P.: *See—*
Bowen, Arlen J.; Dickson, LeRoy D.; Goretzki, Jerome A.; Hendrickson, Kenneth E.; King, Donald P.; Kueper, Terrance W.; and Soderstrom, Ronald L., B382,783.
King Instrument Corporation: *See—*
King, James L., B289,471.
King, James L., to King Instrument Corporation. Method and apparatus for loading cassettes with magnetic tape. B289,471, Cl. 242-56.800.
Kinoshita, Minoru; and Taniuchi, Osami, to LogEtronics Inc. Automatic film processor replenishment system. B412,516, Cl. 354-298.000.
Kirchner, Jack R.; and Vaughan, Lawrence G., to du Pont de Nemours, E. I., and Company. Production of hydrogen peroxide using the anthraquinone process. B323,127, Cl. 423-588.000.
Kirchner, Jack Robert: *See—*
Josey, Alden Dwayne; and Kirchner, Jack Robert, B409,026.
Kitterman, Lawrence Peter: *See—*
Rice, Howard Gene; and Kitterman, Lawrence Peter, B363,962.
Klauke, Erich: *See—*
Wolfrum, Gerhard; Sommer, Richard; and Klauke, Erich, B327,109.
Klein, Gerald I., to Westinghouse Electric Corporation. Microwave phase shifter. B432,373, Cl. 333-31.00A.
Kleiner, Hans-Jerg: *See—*
Bollert, Ulrich; Kleiner, Hans-Jerg; and Jakob, Franz, B390,738.
Klett. Robert D., to United States of America, Atomic Energy Commission. High temperature insulating carbonaceous material. B345,422, Cl. 423-445.000.
Klinke, Peter: *See—*
Ribka, Joachim; Piesch, Steffen; Engelhardt, Friedrich; Pfeiffer, Gerhard; Klinke, Peter; and Schidlo, Wolfram, B408,487.
Klusweg, Hans Ott, to Sandoz, Inc. 1-Substituted-4-aryl-2-(1H)-quinazolinones as pharmaceutical agents. B313,531, Cl. 424-251.000.
Klutchko, Sylvester: *See—*
von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, B438,053.
Knight, George R.: *See—*
Condo, Albert C.; Knight, George R.; Burt, Glenn R.; and Borchert, Alfred E., B418,490.
Knippel, Willis H.; and Marulic, Walter J., to Pullman Incorporated. Railway car door control mechanism. B389,933, Cl. 49-220.000.
Knudsen, Christian W.; and Von Rosenberg, Hermann E. Coal injection system. B444,614, Cl. 48-197.00R.
Koch, Paolo; and Perrotti, Emilio. Process for the production of cyclic thiocarbonates. B402,065, Cl. 260-327.00M.
Kodaira, Yasuo. Switch with an indicating mechanism. B371,073, Cl. 200-308.000.
Kodama, Koji; and Kasai, Yujiro. Switch operating device. B345,527, Cl. 323-48.000.
Koenig & Bauer Aktiengesellschaft: *See—*
Dauner, Bertram Wilhelm-Georg; Marx, Helmut Hermann; and Wolfram, Karl-Heinz Arno, B351,939.
Koivunen, Erkki A., to General Motors Corporation. Accessory shaft drive for a rotary machine. B405,495, Cl. 123-8.010.
Kolb, Michael J., to Armstrong Cork Company. Apparatus to iron fibers on a moving web. B409,816, Cl. 38-49.000.
Kolensky, Leo Michael: *See—*
Fitch, Scott McDowell; Kolensky, Leo Michael; Panek, Joseph Conrad; Rife, David Charles; and Schaefer, Walter Rudolph, B309,207.
Komoto, Hiroshi; and Ohmura, Kaoru, to Asahi Kasei Kogyo Kabushiki Kaisha. Epoxy resin compositions. B363,674, Cl. 260-37.0EP.
Komsa, Sasha, to Caterpillar Tractor Company. Work cycle monitor for machine tools and the like. B323,203, Cl. 235-92.0PD.
Konig, Klaus: *See—*
Traubel, Harro; and Konig, Klaus, B314,049.
Koppers Company, Inc.: *See—*
Howell, Hilda; and Kutz, Walter M., B403,996.
Korosi, Matyas, to Eastman Kodak Company. Recovery of silver from gelatinous photographic wastes. B282,819, Cl. 75-118.000.
Kosinsky, Edward J. Apparatus for drying polymeric material. B282,252, Cl. 425-376.000.
Kosonocky, Stephan; and Post, Lloyd D., to United States of America, Army. Automatic delay graze sensitive fuze. B403,140, Cl. 102-75.000.

Kotera, Hiroaki: *See—*
Sasabe, Kaoru; Kotera, Hiroaki; Hane, Toshihide; and Kihara, Nobuyoshi, B344,203.
Kowalski, Robert P.: *See—*
Starkweather, Gary K.; and Kowalski, Robert P., B309,860.
Kowalski, Xavier, to Monsanto Company. Compositions and process for the electrodeposition of metals. B373,051, Cl. 204-44.000.
Kozo Yoshizaki: *See—*
Misonoo, Kazunaga, B373,297.
Kramer, Willi; and Schanzer, Hans-Peter, to Daimler-Benz Aktiengesellschaft. Air distributor. B261,378, Cl. 98-2.150.
Kravchuck, Robert T., to Texas Instruments Incorporated. Key switch apparatus. B376,654, Cl. 200-159.00R.
Krebs, Klaus-Werner: *See—*
Eicher, Theo; Muller, Friedemann; and Krebs, Klaus-Werner, B306,655.
Kreh, Marvin J.: *See—*
Wiggins, Glenn C.; Kreh, Marvin J.; and Davis, Robert S., B237,953.
Kreit, Bernhardt: *See—*
Jores, Willi; Hoffacker, Franz; Kreit, Bernhardt; Lehmann, Helmut; and Hardenbicker, Herbert, B396,551.
Kressel, Henry, to RCA Corporation. Method of making a transmission photocathode device. B309,756, Cl. 148-171.000.
Kreutze, Gerhard: *See—*
Moessner, Manfred; and Kreutze, Gerhard, B339,059.
Krick, Paul J.: *See—*
Gaensslen, Fritz H.; and Krick, Paul J., B319,402.
Kristinsson, Haukur; and Rufenacht, Kurt, to Ciba-Geigy Corporation. 3H-oxazolo-[4,5-6]-pyridine-2-one ester of 3-(-o-) (-5-)-o-lower alkyl aminophosphates and thiophosphates. B435,343, Cl. 260-294.80C.
Krizak, Eugene J.: *See—*
Hajek, James D.; Krizak, Eugene J.; and McReynolds, Earl E., B343,506.
Kroger, Ingo: *See—*
Richter, Martin; and Kroger, Ingo, B399,349.
Kronman, Seymour: *See—*
Dunetz, Bryant R.; and Kronman, Seymour, B397,527.
Kroschel, Heinz: *See—*
Strunk, Manfred; Kroschel, Heinz; and Voss, Alfred, B387,039.
Krueger, John A.: *See—*
Riseman, John H.; Frant, Martin S.; and Krueger, John A., B349,231.
Kruisman, Gerard: *See—*
Versluis, Jan; Rutten, Hendrikus S.; and Kruisman, Gerard, B379,955.
Kruppert, Frederick W.: *See—*
Franceschina, Louis E.; Haromy, Fred; and Kruppert, Frederick W., B382,798.
Kuehn, Erich, to ICI United States Inc. Vinyl urethane resins from halogenated diols and phospohate tetrols. B364,910, Cl. 260-859.000.
Kueper, Terrance W.: *See—*
Bowen, Arlen J.; Dickson, LeRoy D.; Goretzki, Jerome A.; Hendrickson, Kenneth E.; King, Donald P.; Kueper, Terrance W.; and Soderstrom, Ronald L., B382,783.
Kuhlman, Bernard: *See—*
Wandel, Martin; Salamon, Manfred; Dornheim, Gotz Gotmar; and Kuhlman, Bernard, B286,913.
Kuhn, Hans-Robert, to Electroacustic GmbH Kiel. Electromagnetic sound pick-up. B365,841, Cl. 179-100.41K.
Kujave, John M.: *See—*
Fogelberg, Clement V.; and Kujave, John M., B373,326.
Kurhajec, George A., to Minnesota Mining and Manufacturing Company. Polyurethane sandblast stencil. B306,938, Cl. 161-167.000.
Kurtz, Albert L., to Hill Acme Company, The. Shearing apparatus. B389,327, Cl. 83-568.000.
Kushihashi, Akira; Fuziwara, Yutaka; and Akashi, Naotomo, to Nippon Sheet Glass Co., Ltd. Process and apparatus for producing glass having metal oxide coating. B438,706, Cl. 65-60.000.
Kuster, Werner: *See—*
Wegmann, Jacques; Becker, Carl; Zwahlen, Guenther; and Kuster, Werner, B348,383.
Kutz, Walter M.: *See—*
Howell, Hilda; and Kutz, Walter M., B403,996.
Kuwamoto, Hiroshi: *See—*
Fujii, Seiji; Kamata, Masamoto; Ishida, Masayuki; and Kuwamoto, Hiroshi, B341,579.
Labavia-S.G.E.: *See—*
Bessiere, Pierre Etienne, B358,939.
Lace, Melvin A., to Motorola, Inc. Cartridge tape player drive system. B318,618, Cl. 226-178.000.
Laing, Graham Sterling: *See—*
Morrell, Ronald Joseph; Laing, Graham Sterling; and McEwan, Charles Gordon, B349,321.
Laing, Ingeborg: *See—*
Laing, Nikolaus; and Laing, Ingeborg, B335,773.
Laing, Nikolaus; and Laing, Ingeborg. Building plates with controllable heat insulation. B335,773, Cl. 219-378.000.
Lakey, Leroy E.: *See—*
Johnston, Ralph H.; and Lakey, Leroy E., B419,481.
Lalet, Philippe: *See—*
Fassy, Henri; Lalet, Philippe; and Miletto, Andre, B314,255.
Lamm, Heinz, to Daimler-Benz Aktiengesellschaft. Cooling system for the cooling of the housing of a rotary piston internal combustion engine. B295,481, Cl. 123-8.010.
Land, Edwin H., to Polaroid Corporation. Method of preparing diffusion transfer receiving sheets. B264,257, Cl. 117-62.000.
Langner, Gunther P.: *See—*
Roeder, Henning; Langner, Gunther P.; Scherhag, Bernd; Nickenig, Hans-Lothar; and Loix, Rene, B285,200.
Lashley, Everett R., Jr., to Union Carbide Corporation. Detoxification of aldehydes and ketones. B367,739, Cl. 210-12.000.
Lauer, Charles A.; and Fluet, Francis A., to Westinghouse Electric Corporation. Programmable digital frequency multiplication system with manual override. B392,696, Cl. 235-152.000.
Laurent, Henri: *See—*
Froment, Daniel A.; Laurent, Henri; and Vilain, Victor A., B368,128.
Lavins, Paul N., Jr., to American Induction Heating Corporation. Method for cleaning metallic filters of plastic waste. B292,563, Cl. 210-71.000.
Law, Harold Bell, to RCA Corporation. Method of fabricating an apertured mask for a cathode-ray tube. B264,833, Cl. 156-3.000.
Lawes, Harlan D.: *See—*
Guzman, Adolfo M.; and Lawes, Harlan D., B389,295.
Laybourn, Robert Junior: *See—*
Bowdle, Raymond Ralph; and Laybourn, Robert Junior, B284,297.
Lee, Charles A.; and Furbeck, Warren R., to International Paper Company. Method of and apparatus for bias laying. B311,313, Cl. 156-425.000.
Lee, Charles A.; and Sorrells, Frank D., to International Paper Company. Rectangular disposable diaper having a contoured absorbent pad. B313,594, Cl. 128-287.000.
Lee, Chi-Hang; Scarpellino, Richard J.; and Murtagh, Marjorie M. Sweetness inducer. B276,271, Cl. 426-3.000.
Lee, Chi-Hang; Scarpellino, Richard John; and Murtagh, Marjorie Mary. Sweetness inducer. B332,527, Cl. 426-190.000.
Lee, Chi-Long; and Schulz, Jay R., to Dow Corning Corporation. Acetoxsilicon adhesion promoter and primer composition. B406,065, Cl. 260-32.8SB.
Lee, Lester T. C.; and Liu, Kang-Jen, to Allied Chemical Corporation. Method of making permselective interpolymer membranes. B276,993, Cl. 260-2.50M.
Leeds & Northrup Company: *See—*
Arcara, Samuel A., B405,360.
Leesona Corporation: *See—*
Nelson, John, B398,597.
Lefebvre, Margaret Mary: *See—*
Bobkowicz, Emilian; Bobkowicz, Andrew John; and Lefebvre, Margaret Mary, B294,103.
Lehinant, Armand: *See—*
Von Der Eltz, Hans-Ulrich; Lehinant, Armand; and Maier, Hans-Peter, B336,902.
Lehmann, Helmut: *See—*
Jores, Willi; Lehmann, Helmut; and Hoffacker, Franz, B352,965.
Jores, Willi; Hoffacker, Franz; Kreit, Bernhardt; Lehmann, Helmut; and Hardenbicker, Herbert, B396,551.
Lehmann, Willi, to Westinghouse Electric Corporation. Halogen containing lead activated calcium sulfide luminescent composition. B407,728, Cl. 252-301.40S.
Leidich, Arthur John, to RCA Corporation. Current proportioning circuit. B403,990, Cl. 323-4.000.
Lemcke, Bo: *See—*
Glenn, Lewis A.; Lemcke, Bo; and Ryhming, Inge, B380,014.
Lemoing, Jean: *See—*
Poinsard, Henri; and Lemoing, Jean, B361,443.
Lendi, Ulrich. Car garage. B448,571, Cl. 214-16.1ED.
Lepper, Herbert: *See—*
Rose, David; and Lepper, Herbert, B270,089.
Lev, Yaacov. Cold spot detector for lng tanks and tankers. B402,555, Cl. 324-71.00R.
Lever Brothers Company: *See—*
Gauterin, Charles Rowland; Parke, John Pedlow; and Storer, Christopher Charles, B388,298.
Leverett, Glenn Frederick, to du Pont de Nemours, E. I., and Company. Process for reducing electrostatic charge on polytetrafluoroethylene agglomerates. B324,503, Cl. 264-117.000.
Lewis, Albert D., to Owens-Illinois, Inc. Method of making glass ampuls in a non-contaminating manner. B305,881, Cl. 65-110.000.
Libicki, Henry J., to Nordson Corporation. Apparatus for manufacturing a bellows seals. B294,579, Cl. 82-11.000.
Lidel, Darrel D., to Eastman Kodak Company. Treating polymeric surfaces. B313,029, Cl. 117-93.10R.
Lieske, Manfred: *See—*
Olsen, Willi; and Lieske, Manfred, B303,011.
Liggero, Samuel H.: *See—*
Fielding, Herbert L.; and Liggero, Samuel H., B319,226.
Lindbert, Brook A.; Mertz, Edward H.; and Mc Collum, Wesley L., to General Motors Corporation. Occupant restraint system. B309,499, Cl. 280-150.0AB.
Lindgren, Sune Gunnar: *See—*
Dahlbom, Johan Richard; Karlen, Bo Lennart; and Lindgren, Sune Gunnar, B306,829.
Lindqvist, Stig Gustaf Wilhelm: *See—*
Edstrom, Nils Herbert; Lindqvist, Stig Gustaf Wilhelm; and Sparrendahl, Gunnar Erik William, B327,612.
Lipha, Lyonnaise Industrielle Pharmaceutique: *See—*
Szarvasi, Etienne; and Fontaine, Louis, B379,172.
Litton Business Systems, Inc.: *See—*
Morelli, Joseph L., B329,115.

Litton Systems, Inc.: *See*—
Eggington, Wilfred James, B355,510.
Healy, Robert Michael, B371,836.
Liu, Kang-Jen: *See*—
Lee, Lester T. C.; and Liu, Kang-Jen, B276,993.
Livingston, William L., to Factory Mutual Research Corporation. Non-newtonian liquid and method for wet scrubbing stack gases. B387,818, Cl. 55-85.000.
Lloyd, James R.: *See*—
Todd, William W.; Ilfrey, William T.; and Lloyd, James R., B390,679.
Lock, Everett H.: *See*—
Howard, Willis W.; Maurer, William C.; and Lock, Everett H., B367,021.
Lockard, Joseph Larue, to AMP Incorporated. Alternate make and break type operating means for pushbutton switch assemblies. B376,504, Cl. 200-153.00J.
Loev, Bernard, to SmithKline Corporation. 5-Alkoxy-5-heterocyclic-1,2,3,6-tetrahydro-4(5h)-pyrimidinethiones. B392,154, Cl. 260-256.50R.
Loev, Bernard: *See*—
Bender, Paul E.; and Loev, Bernard, B380,446.
Loewe Opta GmbH: *See*—
Allner, Olaf, B351,863.
Lofquist, Alden A., Jr. Metering pump. B357,682, Cl. 417-320.000.
Logemann, Hugo, Jr., to RCA Corporation. Staircase waveform generator. B411,356, Cl. 328-186.000.
LogEtronics Inc.: *See*—
Kinoshita, Minoru; and Taniuchi, Osami, B412,516.
Logothetis, Anestis Leonidas, to du Pont de Nemours, E. I., and Company. Alternating copolymers of ethylene/alkyl acrylates/cure-site monomers and a process for their preparation. B233,741, Cl. 260-78.50R.
Lohr, Thomas Herbert; and Scholten, Stephen Clair, to Deere & Company. Snowmobile suspension spring adjustment. B352,934, Cl. 180-5.00R.
Loix, Rene: *See*—
Roeder, Henning; Langner, Gunther P.; Scherhag, Bernd; Nickenig, Hans-Lothar; and Loix, Rene, B285,200.
Lork, Winfried: *See*—
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, B393,347.
Louis, Eckhart: *See*—
Nitzsche, Siegfried; Hittmair, Paul; Wohlfarth, Ernst; and Louis, Eckhart, B397,027.
Low, John Lewis: *See*—
Archer, Bill; and Low, John Lewis, B380,312.
Lucan, Joseph L. Garden Tool. B284,427, Cl. 172-375.000.
Lucki, Stanley J.; Chen, Nai Yuen; and Bowes, Emerson, to Mobil Oil Corporation. Disproportionation of aliphatic compounds. B350,245, Cl. 260-676.00R.
Lybrand, Robert A.: *See*—
Ward, John W.; and Lybrand, Robert A., B371,805.
Lynch, Delmar J.: *See*—
Lynch, John P.; and Lynch, Delmar J., B430,798.
Lynch, John P.; and Lynch, Delmar J., to Dolney, Theodore J., a part interest. Gate assembly. B430,798, Cl. 49-246.000.
M & L Aquatics: *See*—
Miller, Jack V., B321,533.
MacWade, Robert W.; and McDevitt, Bernard J. Precision motion control device or the like. B368,397, Cl. 318-561.000.
Magnani, Arthur, to SmithKline Corporation. Anti-arthritic compositions comprising a 3-aryl 2-thiohydantoin and methods of producing anti-arthritic acitvity. B379,038, Cl. 424-273.000.
Magner, James E.: *See*—
Basque, Max G.; Magner, James E.; Surls, Joseph P.; and West, Ben F., B336,978.
Mahoney, Donald Edwin, to RCA Corporation. Frequency multiplier circuit. B428,795, Cl. 321-69.0NL.
Maier, Hans-Peter: *See*—
Von Der Eltz, Hans-Ulrich; Lehinant, Armand; and Maier, Hans-Peter, B336,902.
Mandzsu, Jozsef; Jagicza, Laszlo; Jodal Sandor; Ducza, Lajos; and Avarosi, Laszlo, to FOK-GYEM Finommechanikai es Elektronikus Muszergyarto Sz. Apparatus for the rapid indication of visual information arranged in a mosaic system by means of magnetic indicating elements. B331,895, Cl. 340-378.00R.
Mann, David: *See*—
Cobb, Leslie Hamilton; Mann, David; and Remmington, Timothy Alan, B220,683.
Manning, Robert Everett: *See*—
Buzzolini, Mario Gustav; and Manning, Robert Everett, B442,919.
Margulies, Robert S.; and Biddick, Royce E., to TRW Inc. Grid structure for high rare lead/acid battery. B346,613, Cl. 136-36.000.
Mark, Matthias: *See*—
Barzynski, Helmut; Mark, Matthias; Storck, Gerhard; and Saenger, Dietrich, B392,242.
Martin, John Leroy: *See*—
Zell, Dale Richard; and Martin, John Leroy, B456,346.
Martin, Paul Warren, to Dresser Industries, Inc. Stop collar for tube expander. B377,683, Cl. 72-122.000.
Marulic, Walter J.: *See*—
Knippel, Willis H.; and Marulic, Walter J., B389,933.
Marx, Helmut Hermann: *See*—
Dauner, Bertram Wilhelm-Georg; Marx, Helmut Hermann; and Wolfram, Karl-Heinz Arno, B351,939.
Massey-Ferguson Inc.: *See*—
Mueller, Otto, Jr., B377,869.
Massey-Ferguson-Perkins Limited: *See*—
Ward, , deceased, B304,687.
Masuda, Michio: *See*—
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, B393,163.
Mata, Justo M.: *See*—
Stapley, Edward O.; and Mata, Justo M., P331,417.
Stapley, Edward O.; and Mata, Justo M., B367,661.
Mathis, Donald Lee: *See*—
Ward, Charles Theodore; Mathis, Donald Lee; Radcliff, Frank Taylor; and Vorwerk, Richard, B384,658.
Matsushita Electric Industrial Co., Ltd.: *See*—
Sasabe, Kaoru; Okino, Yoshihiro; and Hayami, Heijiro, B239,289.
Sasabe, Kaoru; Kotera, Hiroaki; Hane, Toshihide; and Kihara, Nobuyoshi, B344,203.
Yoshino, Hirokazu; Yamaguchi, Tetsuo; Tsuboka, Eiichi; and Hatano, Hiroshi, B262,287.
Maurer, William C.: *See*—
Howard, Willis W.; Maurer, William C.; and Lock, Everett H., B367,021.
Maxey, Frank S. Three-component accelerator system. B245,194, Cl. 260-79.50C.
Mayer, Ivan: *See*—
Parker, Paul T.; and Mayer, Ivan, B383,581.
Mc Collum, Wesley L.: *See*—
Lindbert, Brook A.; Mertz, Edward H.; and Mc Collum, Wesley L., B309,499.
McDevitt, Bernard J.: *See*—
MacWade, Robert W.; and McDevitt, Bernard J., B368,397.
McDonald, Henry Stanton, to Bell Telephone Laboratories, Incorporated. Digital system for reclocking pulse code modulation circuits. B295,674, Cl. 179-15.0AP.
McEwan, Charles Gordon: *See*—
Morrell, Ronald Joseph; Laing, Graham Sterling; and McEwan, Charles Gordon, B349,321.
McGinniss, Vincent Daniel, to SCM Corporation. Uv and laser curing of the polymerizable binder. B346,350, Cl. 204-159.230.
McReynolds, Earl E.: *See*—
Hajek, James D.; Krizak, Eugene J.; and McReynolds, Earl E., B343,506.
Mc Shane, Herbert Felix, Jr., to du Pont de Nemours, E. I., and Company. Process for preparing ethylene/propylene/1,4-hexadiene elastomeric terpolymers using catalyst prepared in a wiped-wall catalyst premixer. B342,423, Cl. 260-80.780.
Meaden, James B. Rotary internal combustion engine. B369,997, Cl. 123-8.450.
Medlock, Leslie Ernest: *See*—
Hamilton, John; and Medlock, Leslie Ernest, B359,540.
Meister, Rene; and Tyrode, Alain, to Ebauches S. A. Mounting device for a quartz resonator. B343,240, Cl. 310-9.100.
Merck & Co., Inc.: *See*—
Baldwin, John J.; and Novello, Frederick C., B383,852.
Stapley, Edward O.; and Mata, Justo M., B331,417.
Mertz, Edward H.: *See*—
Lindbert, Brook A.; Mertz, Edward H.; and Mc Collum, Wesley L., B309,499.
Messerschmitt-Bolkow-Blohm GmbH: *See*—
Peschke, Reiner, B287,270.
Metz, Jack L., to Teletype Corporation. Belt printer. B307,677, Cl. 197-1.00R.
Meyer, Hans Rudolf. New distrylbenzene derivatives. B254,708, Cl. 260-505.00C.
Meyer, Rudolf; and Ranz, Erwin, to Agfa-Gevaert Aktiengesellschaft. Method of and apparatus for producing enlarged reproductions of vesicular image negatives. B366,287, Cl. 355-18.000.
Miles Laboratories, Inc.: *See*—
Vidrio, Horacio, B336,946.
Miles, Malcolm G.: *See*—
Cohen, Morrel H.; Miles, Malcolm G.; and Wilson, James D., B318,122.
Miletto, Andre: *See*—
Fassy, Henri; Lalet, Philippe; and Miletto, Andre, B314,255.
Miller, Calvin Max, to Bell Telephone Laboratories, Incorporated. Optical fiber transmission medium. B408,380, Cl. 350-96.00B.
Miller, Jack V., to M & L Aquatics. Aquarium assembly. B321,533, Cl. 119-5.000.
Miller, John J.: *See*—
Collins, Floyd K.; and Miller, John J., B393,970.
Miller, Michael Evans; and Amery, John Gordon, to RCA Corporation. Velocity correction system with damping. B351,598, Cl. 179-100.40E.
Miller, Robert J., to Decision Data Computer Corporation. Sheet feeding equipment. B365,855, Cl. 271-111.000.
Millikan, Allan G.; and Brizee, Mary Jane W., to Eastman Kodak Company. Silver halide photographic materialss containing a high weight ratio of gold to sulfur sensitizers and a sensitizing methine dye. B360,719, Cl. 96-123.000.
Milner, Robert G.: *See*—
Vadla, Jostein J.; and Milner, Robert G., B430,385.
Minakawa, Yoshinari; and Sashida, Akinobu. Guiding device for an automatic film loader. B405,160, Cl. 242-195.000.

Minnesota Mining and Manufacturing Company: *See*—
Baldassarri, Agostino; and Cellone, Luigi, B235,011.
Chapman, Jack C., B333,876.
Coraluppi, Enzo; De Saraca, Elio; and Vittore, Lorenzo, B311,317.
Fayling, Richard E., B356,602.
Fisch, Richard S.; and Newman, Norman, B391,509.
Fraik, Robert D., B322,621.
Gerster, John F., B344,479.
Harrington, Joseph Kenneth; and Trepka, Robert D., B378,621.
Kurhajec, George A., B306,938.
Minolta Camera Kabushiki Kaisha: *See*—
Uesugi, Kyozo, B315,828.
Misonoo, Kazunaga, to Kozo Yoshizaki. Method and apparatus for forming cup-shaped metal articles. B373,297, Cl. 72-345.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Yamamoto, Takeshi, B336,345.
Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, to Sekisu Kagaku Kogyo Kabushiki Kaisha. Photo-degrading resinous composition. B213,211, Cl. 260-2.50B.
Mizuno, Yasushi: *See*—
Okada, Hiroshi; Horibe, Hiroshi; Mizuno, Yasushi; Yasui, Shoji; Ikegaya, Kazuo; and Suzumura, Nobuo, B321,018.
Mobil Oil Corporation: *See*—
Anderson, Conroy D.; Carlson, David W.; Oleck, Stephen M.; and Stover, William A., B269,673.
Hagar, James L.; and Schwartz, Harold E., Jr., B381,847.
Lucki, Stanley J.; Chen, Nai Yuen; and Bowes, Emerson, B350,245.
Rodewald, Paul G.; and Whitehurst, Darrell D., B418,153.
Schoennagel, Hans-Juergen, B389,070.
Moeller & Neumann: *See*—
Biernot, Oskar Karl, B425,539.
Moessner, Manfred; and Kreutze, Gerhard. Cartridge for recording media. B339,059, Cl. 242-198.000.
Mohri, Katsuo: *See*—
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, B393,163.
Moller, Hermann: *See*—
Andres, Rudolf; Moller, Hermann; and Seyfried, Franz, B355,095.
Mollet, Prudent Eduardus Jacobus: *See*—
Blom, Hendrik; and Mollet, Prudent Eduardus Jacobus, B357,803.
Monsanto Company: *See*—
Cohen, Morrel H.; Miles, Malcolm G.; and Wilson, James D., B318,122.
Eilrich, Gary L.; and Dixon, William D., B329,787.
Heimsch, Robert A.; and Reaville, Eric T., B415,845.
Kowalski, Xavier, B373,051.
Morris, Donald E., B254,211.
Mount, Ramon A.; and Raffelson, Harold, B330,354.
Stevens, Harry M., B333,928.
Moore, Harry W., III. Loss of power indicator. B398,625, Cl. 250-459.000.
Morabito, Salvatore: *See*—
Avery, Hazelton H.; and Morabito, Salvatore, B367,812.
Moreau, James O.; and Halko, Richard A. Oil pollution totalizer. B369,563, Cl. 73-61.10R.
Morelli, Joseph L., to Litton Business Systems, Inc. Cartridge with resilient connecting means. B329,115, Cl. 197-151.000.
Mori, Chiharu, to Osahi Kogaku Kogyo Kabushiki Kaisha. Quantized indication arrangement. B430,944, Cl. 356-226.000.
Mori, Hirohumi: *See*—
Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, B213,211.
Mori, Kazuo: *See*—
Inaba, Shigeho; Takahashi, Kei; Yamamoto, Michihiro; Mori, Kazuo; Ishizumi, Kikuo; and Yamamoto, Hisao, B252,947.
Morita, Masanobu: *See*—
Iwasaka, Tatsuo; Inuzuka, Isao; Nakamura, Minoru; Yuminaka, Takeo; and Morita, Masanobu, B341,322.
Moriyama, Itsuki; and Enomoto, Shigeo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic camera setting apparatus. B420,148, Cl. 354-195.000.
Morozumi, Yukio: *See*—
Imai, Fukashi; and Morozumi, Yukio, B365,371.
Morrell, Ronald Joseph; Laing, Graham Sterling; and McEwan, Charles Gordon, to Northern Electric Company, Ltd. Interconnector for telephone units. B349,321, Cl. 179-1.0PC.
Morris, David W., to Rockwell International Corporation. Dobby actuating mechanism for multi-filling insertion. B404,437, Cl. 139-122.00W.
Morris, Donald E., to Monsanto Company. Production of carboxylic acid esters by hydroesterification. B254,211, Cl. 260-497.00A.
Morrison, Albert R.; Haynes, Harold L.; and Bell, Reuben Hays. Glass fibers coated with a size containing starch esters of isoalkanoic acids. B319,414, Cl. 117-126.0GQ.
Morton-Norwich Products, Inc.: *See*—
Snyder, Harry R., Jr., B391,210.
Motorola, Inc.: *See*—
Lace, Melvin A., B318,618.
Mount, Ramon A.; and Raffelson, Harold, to Monsanto Company. Oxidation catalyst. B330,354, Cl. 252-437.000.
Mueller, Guenther: *See*—
Hess, Hans; Mueller, Guenther; and Buehlmann, Xaver, B266,195.
Mueller, Otto, Jr., to Massey-Ferguson Inc. Draft control linkage for a tractor. B377,869, Cl. 172-9.000.
Mulder, Jan Pieter Fokke, to De Rotterdamsche Droogdok Maatschappij N.V. Process for welding a cladding on a base material. B260,455, Cl. 219-76.000.
Mulkens, Casper Antonium Henricus, administrator: *See*—
Bertrams, Johannes Kurt, deceased, B340,767.
Muller, Friedemann: *See*—
Eicher, Theo; Muller, Friedemann; and Krebs, Klaus-Werner, B306,655.
Muller, Karl-Heinz; Rohr, Harry; and Ott, Karl-Heinz, to Bayer Aktiengesellschaft. Method for preparing a completely covered foam molding. B262,241, Cl. 264-54.000.
Murphy, John A.: *See*—
Beckerman, Martin; Murphy, John A.; Orlandi, John V.; and Smith, George W., B351,672.
Murphy, Michael P., to General Motors Corporation. Exhaust gas recirculation system. B412,867, Cl. 123-119.00A.
Murtagh, Marjorie M.: *See*—
Lee, Chi-Hang; Scarpellino, Richard J.; and Murtagh, Marjorie M., B276,271.
Murtagh, Marjorie Mary: *See*—
Lee, Chi-Hang; Scarpellino, Richard John; and Murtagh, Marjorie Mary, B332,527.
Musgrave, Daniel D. Shield for ballistic cutters. B418,302, Cl. 42-90.000.
Nabeyama, Hiroaki: *See*—
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, B393,163.
Nadelson, Jeffrey: *See*—
Houlihan, William J.; and Nadelson, Jeffrey, B224,323.
Naegeli, Werner, to Pavena AG. Apparatus for impregnating textile fibers. B328,870, Cl. 19-66.00R.
Naito, Takayuki; Nakagawa, Susumu; and Toda, Soichiro, to Bristol-Myers Company. 5''-Amino-4',5''-dideoxyambutyrosin. B371,085, Cl. 260-210.0AB.
Nakagawa, Susumu: *See*—
Naito, Takayuki; Nakagawa, Susumu; and Toda, Soichiro, B371,085.
Nakamura, Kenji; Fukuyama, Kunihiko; and Yamamoto, Takuo, to Rion Kabushiki Kaisha. Hearing aid. B354,145, Cl. 179-107.0FD.
Nakamura, Minoru: *See*—
Iwasaka, Tatsuo; Inuzuka, Isao; Nakamura, Minoru; Yuminaka, Takeo; and Morita, Masanobu, B341,322.
Nakano, Yasuaki. Multi-channel sound signal generating and reproducing circuits. B335,741, Cl. 179-1.0GQ.
Nakaya, Naohisa, to Iwasaki Tsushinki Kabashiki Kaisha (a/k/a) Iwatsu Electric Co., Ltd. Sampling oscilloscope circuit. B309,681, Cl. 328-151.000.
Nelson, John, to Leesona Corporation. Single conveyor system for bobbins about a textile apparatus. B398,597, Cl. 209-73.000.
Newman, Norman: *See*—
Fisch, Richard S.; and Newman, Norman, B391,509.
Nicholls, Bryan Frederick: *See*—
Warren, Anthony Charles; and Nicholls, Bryan Frederick, B352,950.
Nichols, Charles E.: *See*—
Andrus, Edward R., Jr.; Fahnstrom, Dale E.; Hansen, James G.; and Nichols, Charles E., B289,175.
Nickenig, Hans-Lothar: *See*—
Roeder, Henning; Langner, Gunther P.; Scherhag, Bernd; Nickenig, Hans-Lothar; and Loix, Rene, B285,200.
Niemeyer, Heinrich, to Westfalia Separator A. G. Centrifuge for the separation of mixtures of liquids. B422,467, Cl. 233-19.00A.
Nilux Holding Societe Anonyme: *See*—
Davidson, Raymond John, B207,272.
Ninomiya, Koichiro: *See*—
Waniishi, Kenji; and Ninomiya, Koichiro, B290,328.
Nippon Hoso Kyokai: *See*—
Iwai, Yoshihiro; and Tanaka, Kunihiko, B349,177.
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, B393,163.
Nippon Kokan Kabushiki Kaisha: *See*—
Fujii, Seiji; Kamata, Masamoto; Ishida, Masayuki; and Kuwamoto, Hiroshi, B341,579.
Nippon Sheet Glass Co., Ltd.: *See*—
Kushihashi, Akira; Fuziwara, Yutaka; and Akashi, Naotomo, B438,706.
Nippon Steel Corporation: *See*—
Shimada, Shunsaku; and Inazumi, Tadahiro, B420,568.
Nirschl, Joseph Peter; and Gloss, Robert Andrew, to Procter & Gamble Company, The. Soap compositions. B305,417, Cl. 252-131.000.
Nischk, Gunther: *See*—
Velker, Eugen; Bentz, Francis; and Nischk, Gunther, B311,413.
Nishita, Sadao: *See*—
Ishii, Hajime; Bannai, Nubuo; and Nishita, Sadao, B291,694.
Nitzsche, Siegfried; Hittmair, Paul; Wohlfarth, Ernst; and Louis, Eckhart, to Wacker Chemie GmbH. Room temperature vulcanizable organopolysiloxanes. B397,027, Cl. 260-46.50G.
Nordson Corporation: *See*—
Libicki, Henry J., B294,579.

Noreika, Alexander J.; and Francombe, Maurice H., to Westinghouse Electric Corporation. Sputtering method for growth of thin uniform layers of epitaxial semiconductor materials doped with impurities. B361,734, Cl. 148-175.000.

Northern Electric Company, Ltd.: *See—*
Morrell, Ronald Joseph; Laing, Graham Sterling; and McEwan, Charles Gordon, B349,321.

Novello, Frederick C.: *See—*
Baldwin, John J.; and Novello, Frederick C., B383,852.

Nystrand, Ernst Daniel, to Paper Converting Machine Company. Disposable diaper. B437,173, Cl. 128-287.000.

Obermaier, Frank E.; and Scott, Arthur A., to Eaton Corporation. Waterline thermostat and assembly. B321,101, Cl. 236-34.000.

Oguey, Henri J.; and Vittoz, Eric Andre, to Centre Electronique Horloger S.A. Logical circuit with field effect transistors. B459,425, Cl. 307-225.00C.

Ohlschlager, Hans; Riester, Oskar; Ghys, Theofiel Hubert; Verhille, Karel Eugeen; and Vanheertum, Johannes Josephus, to Agfa-Gevaert Aktiengesellschaft. Sensitized electrophotographic layers. B342,886, Cl. 96-1.600.

Ohmura, Kaoru: *See—*
Komoto, Hiroshi; and Ohmura, Kaoru, B363,674.

Okada, Hiroshi; Horibe, Hiroshi; Mizuno, Yasushi; Yasui, Shoji; Ikegaya, Kazuo; and Suzumura, Nobuo, to Fukuda Denshi Co., Ltd. Heart beating examining apparatus. B321,018, Cl. 128-2.05P.

Okada, Takashi; and Utsunomiya, Kimitake, to Sony Corporation. Signal Gate Circuit. B399,304, Cl. 307-254.000.

Okato, Tetsu; and Sekio, Isao, to Daido Seiko Kabushiki Kaisha. Electromagnetic stainless steel having excellent machinability. B289,883, Cl. 75-124.000.

Okino, Yoshihiro: *See—*
Sasabe, Kaoru; Okino, Yoshihiro; and Hayami, Heijiro, B239,289.

Older, Robert B.; and Smith, Charles W., to Bunker-Ramo Corporation, The. Coaxial circuit construction and method of making. B437,450, Cl. 174-68.500.

Oleck, Stephen M.: *See—*
Anderson, Conroy D.; Carlson, David W.; Oleck, Stephen M.; and Stover, William A., B269,673.

Olin Mathieson Chemical Corporation: *See—*
Sawyer, Arthur W.; and Csejka, David A., B328,210.

Oliver, Don L., to Cities Service Oil Company. Automatic kelly bushing hold-down device. B403,355, Cl. 64-23.500.

Olsen, Robert C., to Illinois Tool Works, Inc. Multi container package and carrier. B357,057, Cl. 206-427.000.

Olsen, Willi; and Lieske, Manfred, to Siemens Aktiengesellschaft. Completely insulated high-voltage switching system. B303,011, Cl. 317-103.000.

Olson, Leslie C., to University of Minnesota, The Regents of the. Sterile surgical cord and tube retractor. B367,640, Cl. 242-47.500.

O'Neill, John Francis, to Bell Telephone Laboratories, Incorporated. Multifrequency tone detecting arrangement. B349,948, Cl. 179-84.0VF.

Onishi, Toshio: *See—*
Fukuda, Yoshiharu; Onishi, Toshio; and Takeuchi, Akitoshi, B366,402.

Ono, Takuhiro; and Hashimoto, Masafumi. Method for etching a semiconductor element. B361,265, Cl. 156-17.000.

Onoda Cement Company, Ltd.: *See—*
Fukuda, Yoshiharu; Onishi, Toshio; and Takeuchi, Akitoshi, B366,402.

Onopchenko, Anatoli; and Schulz, Johann G. D., to Gulf Research & Development Company. Process for preparing pyromellitic acid. B316,422, Cl. 260-524.00N.

Ookubo, Takashi; and Hamada, Hideo. Fluid actuated clutch. B382,290, Cl. 192-86.000.

Oppenlaender, Knut: *See—*
Dachs, Karl; Faulhaber, Gerhard; Fikentscher, Rolf; Oppenlaender, Knut; and Schulze, Joachim, B259,274.

Orion Research Incorporated: *See—*
Riseman, John H.; Frant, Martin S.; and Krueger, John A., B349,231.

Orlandi, John V.: *See—*
Beckerman, Martin; Murphy, John A.; Orlandi, John V.; and Smith, George W., B351,672.

Orr, Robert S.; and Fidler, Carl E., to Caterpillar Tractor Company. Seal protection guard. B345,567, Cl. 305-11.000.

Orthuber, Richard Kaspar, to International Telephone and Telegraph Corporation. Channel plate electron multiplier adjacent color dot screen. B395,478, Cl. 313-105.000.

Osahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Mori, Chiharu, B430,944.

Oscar Mayer & Co. Inc.: *See—*
Bard, John C.; and Seiferth, Oscar E., B276,560.

Ott, Hans, to Sandoz-Wander, Inc. 1-Substituted-quinazoline-2(1H)-thiones in the treatment of inflammation. B368,862, Cl. 424-251.000.

Ott, Karl-Heinz: *See—*
Muller, Karl-Heinz; Rohr, Harry; and Ott, Karl-Heinz, B262,241.
Schuster, Herbert; Huther, Edmund; Ott, Karl-Heinz; and Dinges, Karl, B256,936.

Overkott, Franz Josef, to Carl U. Peddinghaus. Method for making cartridges containing pressure gas and means for carrying out this method. B322,777, Cl. 53-7.000.

Owens-Illinois, Inc.: *See—*
Camp, Harold E.; and Grier, John D., B340,212.
Lewis, Albert D., B305,881.
Venkatu, Doulatabad A., B351,348.

Ozeroff, William John: *See—*
Caughlin, James Daniel; and Ozeroff, William John, B222,188.

Pactide Corporation: *See—*
Rodgers, Franklin A., B317,624.

Padgitt, Kenneth W., to Borg-Warner Corporation. Solid state control for hospital bed motors. B380,310, Cl. 318-480.000.

Pako Corporation: *See—*
Gaskell, Alfred J., B361,604.

Palitex Project-Company GmbH: *See—*
Frazen, Gustav; and Veltges, Helmut, B376,742.

Panek, Joseph Conrad: *See—*
Fitch, Scott McDowell; Kolensky, Leo Michael; Panek, Joseph Conrad; Rife, David Charles; and Schaefer, Walter Rudolph, B309,207.

Paper Converting Machine Company: *See—*
Nystrand, Ernst Daniel, B437,173.

Paris, Nikolaus: *See—*
Hausweiller, Arnold; Paris, Nikolaus; and Ennenbach, Karl-Heinz, B260,945.

Park-Ohio Industries, Inc.: *See—*
Jensen, Fred C., B420,016.

Parke, John Pedlow: *See—*
Gauterin, Charles Rowland; Parke, John Pedlow; and Storer, Christopher Charles, B388,298.

Parker, Paul T.; and Mayer, Ivan, to Exxon Research and Engineering Company. Alkylation process with recovery and regeneration of fluorosulfuric acid catalyst. B383,581, Cl. 260-683.580.

Parris, Joseph N., to PPG Industries, Inc. Hermetically sealed thermocouple assembly. B317,347, Cl. 136-234.000.

Paterson, Thomas G., to Pullman Incorporated. Railway car door control mechanism. B389,932, Cl. 49-220.000.

Patti, Michael Joseph, to International Business Machines Corporation. Method and apparatus for testing high circuit density devices. B394,712, Cl. 324-73.00R.

Pavena AG: *See—*
Naegeli, Werner, B328,870.

Pearson, Lee E.: *See—*
Bartlow, David H.; Jones, Bernard Howard; and Pearson, Lee E., B288,638.

Pedersen, Harry; and White, Philip F., to Gleason Works, The. Apparatus for following a previously shaped surface of a workpiece and for removing stock from such surface without significantly changing the shape thereof. B391,437, Cl. 51-33.00W.

Pero, Richard E. Protective insert for lined conduit. B364,786, Cl. 138-109.000.

Perrault, Frederick; and Perrault, Raymond E. Electrical box mounting arrangement. B424,415, Cl. 174-51.000.

Perrault, Raymond E.: *See—*
Perrault, Frederick; and Perrault, Raymond E., B424,415.

Perrotti, Emilio: *See—*
Koch, Paolo; and Perrotti, Emilio, B402,065.

Peschke, Reiner, to Messerschmitt-Bolkow-Blohm GmbH. Plastic bearing. B287,270, Cl. 244-46.000.

Petersen, Christian C., to Polaroid Corporation. Electromagnetically regulated exposure control system. B350,025, Cl. 354-271.000.

Petersen, Harro; Erhardt, Klaus; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenther. A crease resistant cellulosic textile material. B314,800, Cl. 117-139.400.

Peterson, Dwight R.: *See—*
Goldinger, John A.; and Peterson, Dwight R., B440,898.

Peterson, William Anders, to Bell Telephone Laboratories, Incorporated. Sampling circuit. B389,639, Cl. 307-235.00R.

Petrovic, John E., to Graco Inc. Safety spray gun trigger. B450,927, Cl. 239-526.000.

Pfeiffer, Gerhard: *See—*
Ribka, Joachim; Piesch, Steffen; Engelhardt, Friedrich; Pfeiffer, Gerhard; Klinke, Peter; and Schidlo, Wolfram, B408,487.

Phillips, Howard M.: *See—*
Free, Dustin L.; and Phillips, Howard M., B251,345.

Phillips Petroleum Company: *See—*
Chapman, Charles C., B426,674.
Cheng, Paul J., B313,098.
Cox, Ralph, B337,409.
Dixon, Rolland E., B359,791.
Fahey, Darryl R., B316,917.
Harper, Ernest A., B421,383.
Rees, Robert L., B312,139.

Piesch, Steffen: *See—*
Ribka, Joachim; Piesch, Steffen; Engelhardt, Friedrich; Pfeiffer, Gerhard; Klinke, Peter; and Schidlo, Wolfram, B408,487.

Pilkington, Mary W.: *See—*
Berni, Ralph J.; Benerito, Ruth R.; and Pilkington, Mary W., B315,731.

Poinsard, Henri; and Lemoing, Jean, to Thomson-CSF. System for processing the signal received by a sideways looking airborne radar system. B361,443, Cl. 343-5.0CM.

Polaroid Corporation: *See—*
Chiklis, Charles K., B354,008.
Ellin, Seymour, B383,465.
Fielding, Herbert L.; and Liggero, Samuel H., B319,226.
Fitzgerald, Maurice J., B320,452.
Land, Edwin H., B264,257.
Petersen, Christian C., B350,025.

Pollert, Wolfgang. Apparatus for adjusting fan blades in a turbojet engine. B353,387, Cl. 60-226.00R.

Pommer, Ernst Heinrich: *See—*
Schwarzmann, Matthias; Gotsmann, Guenther; Heinze, Peter; and Pommer, Ernst Heinrich, B129,999.
Poot, Albert Lucien; Heugebaert, Frans Clement; Janssens, Wilhelmus; and Vandenberghe, Antoon Leon, to Agfa-Gevaert Aktiengesellschaft. Heat-sensitive recording materials. B335,670, Cl. 117-36.200.
Popov, Encho Nikolov; Diakov, Nikola Ganev; Dobreva-Dimitrova, Emilia; Apostolov, Roumen Konstantinov; and Hristov, Hristo Petkov. Statorless dynamo-electric machine. B360,910, Cl. 310-242.000.
Porter, Lawrence C.; and Graves, Kenneth E., to Upjohn Company, The. Method for producing isotropic foamed stock. B294,673, Cl. 264-40.000.
Portnoy, Norman A.; Reine, Alden H.; and Arthur, Jett C., Jr., to United States of America, Agriculture. Cotton-oxime, cotton-semicarbazone, and cotton-hydantoin-textile products of high nitrogen content. B348,558, Cl. 8-194.000.
Post, Lloyd D.: *See—*
Kosonocky, Stephan; and Post, Lloyd D., B403,140.
Postma, Lambertus. Multi-layered photosensitive material having glass substrate and method of manufacture. B326,514, Cl. 96-67.000.
Poundstone, William N. Method of mining with a programmed profile guide for a mining machine. B425,345, Cl. 299-1.000.
Powell, Alfred, to Calgon Corporation. Use of aminoalkylene phosphonic acids for corrosion inhibition. B336,566, Cl. 21-2.70A.
PPG Industries, Inc.: *See—*
Dahlberg, John R.; and Grove, Robert H., B422,949.
Franz, Helmut, B429,442.
Goldinger, John A.; and Peterson, Dwight R., B440,898.
Johnson, Harlan B., B388,701.
Parris, Joseph N., B317,347.
Rideout, Walker H.; and Glenn, Palmer S., B315,397.
Prinz, Peter: *See—*
Erpenbach, Heinz; Gehrmann, Klaus; Lork, Winfried; and Prinz, Peter, B393,347.
Procter & Gamble Company, The: *See—*
Barrat, Christian, B310,740.
Nirschl, Joseph Peter; and Gloss, Robert Andrew, B305,417.
Pullen, Edward A. Wax coating compositions. B241,433, Cl. 260-28.5AV.
Pullman Incorporated: *See—*
Knippel, Willis H.; and Marulic, Walter J., B389,933.
Paterson, Thomas G., B389,932.
Putman, Richard E., to Westinghouse Electric Corporation. Computer control system for paper pulp bleach plant. B300,004, Cl. 235-151.120.
Radcliff, Frank Taylor: *See—*
Ward, Charles Theodore; Mathis, Donald Lee; Radcliff, Frank Taylor; and Vorwerk, Richard, B384,658.
Radielovic, Dragutin: *See—*
Wanmaker, Willem Lambertus; and Radielovic, Dragutin, B288,018.
Radler, Richard William: *See—*
Bergfjord, John Alf; Grammatica, Steven James; and Radler, Richard William, B337,787.
Raffelson, Harold: *See—*
Mount, Ramon A.; and Raffelson, Harold, B330,354.
Rafferty, James B.: *See—*
Clark, John O.; Rafferty, James B.; and Schindler, Donald G., B357,131.
Rakestraw, Thomas L.: *See—*
Augustin, Eugene H.; Johnson, Roger E.; and Rakestraw, Thomas L., B368,392.
Randour, Victor: *See—*
Clasper, Thomas; Hutton, Wilfred H.; Kessinger, Orville E., Jr.; Randour, Victor; and Simpson, Fred E., B373,428.
Rankowitz, Marshall M.: *See—*
Feldbrugge, Alonzo H. R.; Rankowitz, Marshall M.; and Huste, Arno, B395,496.
Ranz, Erwin: *See—*
Meyer, Rudolf; and Ranz, Erwin, B366,287.
Rapoport, Henry, to University of California, The Regents of the. CERTAIN 6,7-DIOXO-2H-PYRROLO-[2,1-b]THIAZENES. B425,470, Cl. 260-243.00R.
Raseman, Chad J.: *See—*
Delano, Richard; and Raseman, Chad J., B278,991.
Raytheon Company: *See—*
Volpe, John W., B289,523.
RCA Corporation: *See—*
Carlson, Curtis Raymond; Gorog, Istvan; and Heyman, Philip Michael, B445,471.
Dean, Raymond Harkless, B316,014.
Feldstein, Nathan, B319,339.
Feldstein, Nathan; and Weiner, Joel Alan, B415,113.
Fisher, William Francis, B405,137.
Forster, Gerhard; and Keller, Hans, B359,947.
Gehweiler, William Frederick, B365,834.
Griffin, Roger Thomas, B389,726.
Jackson, Arnel Edmund; and Singer, George Anthony, B405,136.
Kressel, Henry, B309,756.
Law, Harold Bell, B264,833.
Leidich, Arthur John, B403,990.
Logemann, Hugo, Jr., B411,356.
Mahoney, Donald Edwin, B428,795.
Miller, Michael Evans; and Amery, John Gordon, B351,598.
Schade, Otto Heinrich, Jr., B387,171.
Weimer, Paul Kessler, B309,755.
Reaville, Eric T.: *See—*
Heimsch, Robert A.; and Reaville, Eric T., B415,845.
Rees, Robert L., to Phillips Petroleum Company. Release coating for molds. B312,139, Cl. 264-297.000.
Reese, Cecil E., to du Pont de Nemours, E. I., and Company. Production of mixed shrinkage yarn. B292,300, Cl. 264-210.00F.
Reeves, Wilson A.: *See—*
Donaldson, Darrell J.; Drake, George L., Jr.; Beninate, John V.; Reeves, Wilson A.; and Daigle, Donald J., B265,862.
Reine, Alden H.: *See—*
Portnoy, Norman A.; Reine, Alden H.; and Arthur, Jett C., Jr., B348,558.
Reinhard, Ruedi. Pile carpet and a process for its manufacture. B342,084, Cl. 161-67.000.
Reinhardt, Thomas A.: *See—*
Baldwin, Arlen R.; and Reinhardt, Thomas A., B351,926.
Reinnagel, Richard E., to United States of America, Army. Liquid motion anti-disturbance switch. B433,587, Cl. 200-61.470.
Reinsma, Harold L., to Caterpillar Tractor Company. Method and apparatus for vacuum evacutation and pressure filling of sealed pin joints. B342,763, Cl. 184-1.00R.
Remmington, Timothy Alan: *See—*
Cobb, Leslie Hamilton; Mann, David; and Remmington, Timothy Alan, B220,683.
Renner, Hermann: *See—*
Barenyi, Bela; and Renner, Hermann, B259,236.
Reno S. A.: *See—*
Bargetzi, Rene Maurice, B299,267.
Reuss, Guenther: *See—*
Petersen, Harro; Erhardt, Klaus; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenther, B314,800.
Reuther, John F., to Westinghouse Electric Corporation. Industrial gas turbine power plant control system having capability for effectuating automatic fuel transfer under load preferably employing a digital computer. B308,892, Cl. 322-15.000.
Rhone-Poulenc S.A.: *See—*
Gerard, Bernard, B317,080.
Sagi, Ferenc; and Roussos, Michel, B370,706.
Ribka, Joachim; Piesch, Steffen; Engelhardt, Friedrich; Pfeiffer, Gerhard; Klinke, Peter; and Schidlo, Wolfram. Dyes and pigmented articles wherein the fixing agent is a polymer based on n-formyl -n-acryloyl-methylenediamines. B408,487, Cl. 117-38.000.
Rice, Charles H. Process for making liquid and gaseous fuels from caking coals. B395,671, Cl. 48-210.000.
Rice, Howard Gene; and Kitterman, Lawrence Peter. Tray stacking system. B363,962, Cl. 214-6.0FA.
Richards, William D., to American Optical Corporation. Slow-speed tape recorder drive mechanism. B396,025, Cl. 242-206.000.
Richter, Martin; and Kroger, Ingo, to Siemens Aktiengesellschaft. Arrangement for the transmission of control commands from a stationary part to a rotating part of an electric machine. B399,349, Cl. 310-68.00D.
Richtzenhain, Hermann: *See—*
Riegger, Paul; and Richtzenhain, Hermann, B233,383.
Ricks, Herbert E., to Westinghouse Electric Corporation. Abrasion resistant coating for aluminum base alloy and method. B399,766, Cl. 29-197.000.
Rideout, Walker H.; and Glenn, Palmer S., to PPG Industries, Inc. Methods for purification of hydrogen chloride. B315,397, Cl. 423-481.000.
Riefel, Guenther: *See—*
Schmeidl, Karl; Eisert, Manfred; and Riefel, Guenther, B321,938.
Riegger, Paul; and Richtzenhain, Hermann. Process for preparing 4-chloroformyl phthalic acid anhydride. B233,383, Cl. 260-346.300.
Riester, Oskar: *See—*
Ohlschlager, Hans; Riester, Oskar; Ghys, Theofiel Hubert; Verhille, Karel Eugeen; and Vanheertum, Johannes Josephus, B342,886.
Rife, David Charles: *See—*
Fitch, Scott McDowell; Kolensky, Leo Michael; Panek, Joseph Conrad; Rife, David Charles; and Schaefer, Walter Rudolph, B309,207.
Rion Kabushiki Kaisha: *See—*
Nakamura, Kenji; Fukuyama, Kunihiko; and Yamamoto, Takuo, B354,145.
Riseman, John H.; Frant, Martin S.; and Krueger, John A., to Orion Research Incorporated. Hydrogen sulfide sensing cell. B349,231, Cl. 204-195.00P.
Robbins, Samuel B., to General Motors Corporation. Collision recorder. B305,868, Cl. 73-492.000.
Robertshaw Controls Company: *See—*
Caldwell, Edward N., B405,132.
Rockford Automation, Inc.: *See—*
Block, Bruce E.; and Samuelson, Philip H., B449,647.
Rockwell International Corporation: *See—*
Morris, David W., B404,437.
Watson, George A.; and Bollinger, John J., B354,296.
Rodewald, Paul G.; and Whitehurst, Darrell D., to Mobil Oil Corporation. Antimony pentafluoride hydrocarbon conversion catalyst. B418,153, Cl. 252-441.000.
Rodgers, Franklin A., to Pactide Corporation. Multi-stage disposable still. B317,624, Cl. 202-174.000.

Roeder, Henning; Langner, Gunther P.; Scherhag, Bernd; Nickenig, Hans-Lothar; and Loix, Rene, to Bayer Aktiengesellschaft. Agglomerated rubber chemicals. B285,200, Cl. 252-182.000.
Rogers, John K. Boric acid complex. B255,756, Cl. 260-209.00R.
Rohr, Harry: *See—*
Muller, Karl-Heinz; Rohr, Harry; and Ott, Karl-Heinz, B262,241.
Rolfe, Alfred H., to Automatic Switch Company. Variable bleed valve. B377,833, Cl. 251-35.000.
Romanowicz, Karl J., Jr. Spark Plug Cleaner. B353,546, Cl. 51-8.0SP.
Rose, Dale P., to General Motors Corporation. Rotary engine anti-spin oil seal. B424,572, Cl. 418-142.000.
Rose, David; and Lepper, Herbert, to Henkel & Cie GmbH. Process for producing alkadienol esters. B270,089, Cl. 260-497.00A.
Rosenberg, Robert L.; and Schmidt, Ronald Vernon, to Bell Telephone Laboratories, Incorporated. Surface wave tubular acoustic delay line. B410,168, Cl. 333-30.00R.
Ross, Sidney D.: *See—*
Alwitt, Robert S.; and Ross, Sidney D., B280,395.
Rouse, Paul L.; and Francis, Robert L., to International Harvester Company. Grain pan bottom door. B330,828, Cl. 130-24.000.
Roussos, Michel: *See—*
Sagi, Ferenc; and Roussos, Michel, B370,706.
Rowland, William P. Highway retroreflecting marker. B358,174, Cl. 404-15.000.
Roy, Prodyot; Simpson, James L.; and Aitken, Edward A., to United States of America, Atomic Energy Commission. Apparatus for fabricating composite ceramic members. B467,684, Cl. 118-49.100.
Rudolph, Hans: *See—*
Bockmann, August; Teichmann, Gunter; and Rudolph, Hans, B380,926.
Ruemens, Wilhelm: *See—*
Petersen, Harro; Erhardt, Klaus; Ruemens, Wilhelm; Bille, Heinz; and Reuss, Guenther, B314,800.
Rufenacht, Kurt: *See—*
Kristinsson, Haukur; and Rufenacht, Kurt, B435,343.
Ruthe, Helmut: *See—*
Keyl, Erwin; Ruthe, Helmut; and Thiele, Gerd, B432,424.
Rutten, Hendrikus S.: *See—*
Versluis, Jan; Rutten, Hendrikus S.; and Kruisman, Gerard, B379,955.
Ryhming, Inge: *See—*
Glenn, Lewis A.; Lemcke, Bo; and Ryhming, Inge, B380,014.
Saco-Lowell Corporation: *See—*
Savageau, Richard J.; Clevenger, Earl C.; and Anderson, Gordon C., B395,889.
Saenger, Dietrich: *See—*
Barzynski, Helmut; Mark, Matthias; Storck, Gerhard; and Saenger, Dietrich, B392,242.
Sagi, Ferenc; and Roussos, Michel, to Rhone-Poulenc S.A. Process for reducing foaming of liquids susceptible to foaming. B370,706, Cl. 252-321.000.
Salamon, Manfred: *See—*
Wandel, Martin; Salamon, Manfred; Dornheim, Gotz Gotmar; and Kuhlman, Bernard, B286,913.
Samuelson, Philip H.: *See—*
Block, Bruce E.; and Samuelson, Philip H., B449,647.
Sandoz, Inc.: *See—*
Klusweg, Hans Ott, B313,531.
Sandoz-Wander, Inc.: *See—*
Buzzolini, Mario Gustav; and Manning, Robert Everett, B442,919.
Ott, Hans, B368,862.
Sandy, Charles A., to du Pont de Nemours, E. I., and Company. Carbon residue inhibitor for distillate fuels. B416,598, Cl. 44-62.000.
Sasabe, Kaoru; Okino, Yoshihiro; and Hayami, Heijiro, to Matsushita Electric Industrial Co., Ltd. Color signal correction in a color facsimile. B239,289, Cl. 358-75.000.
Sasabe, Kaoru; Kotera, Hiroaki; Hane, Toshihide; and Kihara, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Image display system. B344,203, Cl. 358-6.000.
Sashida, Akinobu: *See—*
Minakawa, Yoshinari; and Sashida, Akinobu, B405,160.
Savageau, Richard J.; Clevenger, Earl C.; and Anderson, Gordon C., to Saco-Lowell Corporation. Spindle whirl cleaner. B395,889, Cl. 28-19.000.
Sawabe, Eiichi: *See—*
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, B393,163.
Sawyer, Arthur W.; and Csejka, David A., to Olin Mathieson Chemical Corporation. Borate esters prepared by successive reactions of boric acid with glycol. B328,210, Cl. 260-462.00R.
Saxenmeyer, George J., Jr.: *See—*
Caricchio, Jerome J., Jr.; Saxenmeyer, George J., Jr.; and York, Edward R., B450,499.
Sayles, David C., to United States of America, Army. Propellant with acrylate copolymer binder and butanetriol trinitrate plasticizer. B064,868, Cl. 149-19.300.
Sayles, David C., to United States of America, Army. Solid propellants with biradical burning rate catalysts. B078,331, Cl. 149-19.800.
Scarpellino, Richard J.: *See—*
Lee, Chi-Hang; Scarpellino, Richard J.; and Murtagh, Marjorie M., B276,271.
Scarpellino, Richard John: *See—*
Lee, Chi-Hang; Scarpellino, Richard John; and Murtagh, Marjorie Mary, B332,527.
Schaafsma, Sijbrandus E.; and Deumens, Johannes J. M. Preparation of 3,4,5,6,7,8-hexahydrocoumarin. B336,243, Cl. 260-343.20R.
Schade, Otto Heinrich, Jr., to RCA Corporation. Current amplifier. B387,171, Cl. 330-35.000.
Schaefer, Walter Rudolph: *See—*
Fitch, Scott McDowell; Kolensky, Leo Michael; Panek, Joseph Conrad; Rife, David Charles; and Schaefer, Walter Rudolph, B309,207.
Schaller, Robert L., to Sundstrand Syracuse, Inc. Centerless grinder with hydraulic drive. B332,811, Cl. 51-103.0TF.
Schanzer, Hans-Peter: *See—*
Kramer, Willi; and Schanzer, Hans-Peter, B261,378.
Schardt, Courtney Harold; and Schepis, Albert James, to Bell Telephone Laboratories, Incorporated. Apparatus and method for tracing jumpers in a main distributing frame. B355,269, Cl. 179-175.30A.
Scharfe, Gerhard: *See—*
Swodenk, Wolfgang; and Scharfe, Gerhard, B330,536.
Scheinpflug, Hans: *See—*
Buchel, Karl Heinz; Frohberger, Paul-Ernst; Scheinpflug, Hans; and Enders, Edgar, B261,828.
Schellhammer, Carl-Wolfgang: *See—*
Dorlars, Alfons; and Schellhammer, Carl-Wolfgang, B322,182.
Schepis, Albert James: *See—*
Schardt, Courtney Harold; and Schepis, Albert James, B355,269.
Scherhag, Bernd: *See—*
Roeder, Henning; Langner, Gunther P.; Scherhag, Bernd; Nickenig, Hans-Lothar; and Loix, Rene, B285,200.
Schidlo, Wolfram: *See—*
Ribka, Joachim; Piesch, Steffen; Engelhardt, Friedrich; Pfeiffer, Gerhard; Klinke, Peter; and Schidlo, Wolfram, B408,487.
Schindler, Donald G.: *See—*
Clark, John O.; Rafferty, James B.; and Schindler, Donald G., B357,131.
Schloemann Aktiengesellschaft: *See—*
Schmoll, Heinz; and Jenke, Dieter, B364,241.
Schlumberger Technology Corporation: *See—*
Urbanosky, Harold J., B407,736.
Schmeidl, Karl; Eisert, Manfred; and Riefel, Guenther. Alcohol-soluble ethyl auramine salts. B321,938, Cl. 260-566.00R.
Schmid, Markus, to Concast A.G. Adjustable plate mold for continuous casting. B337,442, Cl. 164-280.000.
Schmidt, Donald J., to United States of America, Air Force. Method and system for computing altitude over a target and the horizontal range thereof. B278,491, Cl. 343-12.00A.
Schmidt, Jurgen; and Hesse, Jurgen. Device for Deburring Work Pieces. B311,910, Cl. 51-13.000.
Schmidt, Ronald Vernon: *See—*
Rosenberg, Robert L.; and Schmidt, Ronald Vernon, B410,168.
Schmitt, Bernard: *See—*
Gaeth, Rudolf; Hoelscher, Friedrich; Schmitt, Bernard; and Blum, Dieter, B320,261.
Schmoll, Heinz; and Jenke, Dieter, to Schloemann Aktiengesellschaft. Sliding and locking the forging tools on a forging press. B364,241, Cl. 72-407.000.
Schneider, Bernd, to Siemens Aktiengesellschaft. Pressure operated control for resistance welding machines. B415,957, Cl. 219-89.000.
Schneider, Ronald A., to Chevron Research Company. Synthesis of acrylic acids and esters. B356,887, Cl. 260-486.00D.
Schnitta, Edward: *See—*
Greenwood, Arthur R.; Heinze, Walter W.; Schnitta, Edward; and Andrejasich, Frank H., B356,253.
Schoenewaldt, Erwin F. 2-Thio-(cis-1,2-epoxypropyl)phosphonic acid derivatives. B360,986, Cl. 260-348.00R.
Schoennagel, Hans-Juergen, to Mobil Oil Corporation. Hydrocarbon reforming process with heated aromatic recycle. B389,070, Cl. 208-135.000.
Scholten, Stephen Clair: *See—*
Lohr, Thomas Herbert; and Scholten, Stephen Clair, B352,934.
Schrenk, Walter J. Coextrusion apparatus. B324,739, Cl. 425-131.100.
Schuetz, Hans-Ulrich: *See—*
Buehler, Arthur; and Schuetz, Hans-Ulrich, B190,679.
Schulz, Jay R.: *See—*
Lee, Chi-Long; and Schulz, Jay R., B406,065.
Schulz, Johann G. D.: *See—*
Onopchenko, Anatoli; and Schulz, Johann G. D., B316,422.
Schulze, Joachim: *See—*
Dachs, Karl; Faulhaber, Gerhard; Fikentscher, Rolf; Oppenlaender, Knut; and Schulze, Joachim, B259,274.
Schuster, Herbert; Huther, Edmund; Ott, Karl-Heinz; and Dinges, Karl, to Bayer Aktiengesellschaft. Moulding compositions. B256,936, Cl. 260-883.000.
Schwartz, Bertram: *See—*
Dyment, John Cameron; and Schwartz, Bertram, B292,126.
Schwartz, Harold E., Jr.: *See—*
Hagar, James L.; and Schwartz, Harold E., Jr., B381,847.
Schwarzmann, Matthias; Gotsmann, Guenther; Heinze, Peter; and Pommer, Ernst Heinrich. 2-Haloalkylamino-s-triazines. B129,999, Cl. 260-249.600.
Schwing, Gregory Wayne: *See—*
Adams, John Benjamin; and Schwing, Gregory Wayne, B387,790.
SCM Corporation: *See—*
Bastian, Donald G., B405,248.
McGinniss, Vincent Daniel, B346,350.
Scott, Arthur A.: *See—*
Obermaier, Frank E.; and Scott, Arthur A., B321,101.

Sebek, Oldrich K.: *See—*
Argoudelis, Alexander D.; Coates, John H.; and Sebek, Oldrich K., B424,462.
Segal, Joshua L., to United States of America, Air Force. Base two exponential counter. B407,357, Cl. 328-51.000.
Segal, Leon, to Allied Chemical Corporation. Method of rapidly forming hollow objects from reinforced plastic sheeting. B337,235, Cl. 264-255.000.
Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Communication system employing spectrum folding. B361,569, Cl. 179-15.55R.
Seidel, William B., to Babcock & Wilcox Company, The. Cam controlled machine tools with contour compensator. B318,745, Cl. 51-101.00R.
Seiferth, Oscar E.: *See—*
Bard, John C.; and Seiferth, Oscar E., B276,560.
Seitzer, Walter H.; and Shinn, Robert W., to Sun Research and Development Co. Coal dissolving process. B323,568, Cl. 208-10.000.
Sekio, Isao: *See—*
Okato, Tetsu; and Sekio, Isao, B289,883.
Sekisu Kagaku Kogyo Kabushiki Kaisha: *See—*
Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, B213,211.
Seyfried, Franz: *See—*
Andres, Rudolf; Moller, Hermann; and Seyfried, Franz, B355,095.
Shasha, Baruch S.: *See—*
Trimnell, Donald; Shasha, Baruch S.; and Doane, William M., B391,184.
Shavel, John, Jr.: *See—*
von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, B438,053.
Shay, Joseph Leo: *See—*
Bachmann, Klaus Jurgen; Buehler, Ernest; Shay, Joseph Leo; and Wernick, Jack Harry, B382,021.
Shear, William: *See—*
Doyle, Alfred Michael; and Shear, William, B324,505.
Shelnutt, Robbie E. Scr and diode tester. B337,703, Cl. 324-158.00D.
Shepherd, Lawrence H., Jr. Polycyclic compounds. B391,675, Cl. 260-666.0PY.
Shimada, Shunsaku; and Inazumi, Tadahiro, to Nippon Steel Corporation. Process for producing pellets with cement. B420,568, Cl. 75-3.000.
Shimodaira, Tadayoshi. Printing mechanism. B287,373, Cl. 197-49.000.
Shinn, Robert W.: *See—*
Seitzer, Walter H.; and Shinn, Robert W., B323,568.
Shoemaker, John Robert, to AMP Incorporated. Flat cable electrical connections and methods of making same. B368,387, Cl. 339-278.00M.
Shuman, Richard F. 2-Sulfonyloxyethyl 3-trifluoromethylphenoxy-4'-chlorophenyl acetate. B410,062, Cl. 260-456.00R.
Siemens Aktiengesellschaft: *See—*
Bucherl, Erwin, B389,807.
Deutsch, Josef, B409,251.
Goldmann, Gerd; and Eschler, Hans, B347,780.
Haeusler, Jochen, B355,595.
Keyl, Erwin; Ruthe, Helmut; and Thiele, Gerd, B432,424.
Olsen, Willi; and Lieske, Manfred, B303,011.
Richter, Martin; and Kroger, Ingo, B399,349.
Schneider, Bernd, B415,957.
Touchy, Wolfgang, B339,218.
Siewert, Robert M., to General Motors Corporation. Staged combustion engines and methods of operation. B282,390, Cl. 123-1.00R.
Sigworth, Frederick J., to Systron-Donner Corporation. Low noise electronic circuit, transducer using the same, and method. B307,110, Cl. 179-1.00P.
Silva, Arthur P. D.; and Fassel, Velmer A, both of, to United States of America, Atomic Energy Commission. X-ray image intensifier phosphor. B327,899, Cl. 117-33.50R.
Silver, Robert H.: *See—*
United States of America, National Aeronautics and Space Administration; Silver, Robert H.; and Kalfayan, Sarkis H., B382,261.
Simonovitch, Chaim: *See—*
Just, George E.; and Simonovitch, Chaim, B281,341.
Simpson, Fred E.: *See—*
Clasper, Thomas; Hutton, Wilfred H.; Kessinger, Orville E., Jr.; Randour, Victor; and Simpson, Fred E., B373,428.
Simpson, James L.: *See—*
Roy, Prodyot; Simpson, James L.; and Aitken, Edward A., B467,684.
Sinfelt, John H.; and Carter, James L. Reforming process. B411,483, Cl. 208-139.000.
Singer Company, The: *See—*
Cooksey, John Andrew, B348,495.
Singer, George Anthony: *See—*
Jackson, Arnel Edmund; and Singer, George Anthony, B405,136.
Sintef: *See—*
Tangsrud, Nils; and Devik, Ole Gabriel, B363,337.
Skomoroski, Robert M.; and Zobbi, Robert G. Method and composition for producing bright palladium electrodepositions. B435,844, Cl. 204-43.00N.
Skrentner, Frank C., to Jos. F. Lamb, Company. Machine for forming pistons of elliptical cross section. B305,597, Cl. 82-19.000.
Smith, Charles W.: *See—*
Older, Robert B.; and Smith, Charles W., B437,450.
Smith, George W.: *See—*
Beckerman, Martin; Murphy, John A.; Orlandi, John V.; and Smith, George W., B351,672.
Smith, Merton L.: *See—*
Strack, Richard R.; and Smith, Merton L., B359,174.
Smith, Robert D.; and Upchurch, William B. Process for forming thin walled articles or thin sheets. B346,044, Cl. 264-63.000.
Smith, Robert J. Energy absorbing steering column. B360,296, Cl. 74-492.000.
SmithKline Corporation: *See—*
Bender, Paul E.; and Loev, Bernard, B380,446.
Loev, Bernard, B392,154.
Magnani, Arthur, B379,038.
Snyder, Harry R., Jr., to Morton-Norwich Products, Inc. 1-(5-Nitrofur 'furylidene)amino)-4(and 5)-phenyl-2-imidazolidinone. B391,210, Cl. 260-240.00A.
Societe Anonyme D.B.A.: *See—*
Gautier, Jean-Pierre, B350,843.
Societe Aquitaine Total Organico: *See—*
Fassy, Henri; Lalet, Philippe; and Miletto, Andre, B314,255.
Soderstrom, Ronald L.: *See—*
Bowen, Arlen J.; Dickson, LeRoy D.; Goretzki, Jerome A.; Hendrickson, Kenneth E.; King, Donald P.; Kueper, Terrance W.; and Soderstrom, Ronald L., B382,783.
Solvay & Cie: *See—*
Giacopelli, Umberto, B318,640.
Sommer, Richard: *See—*
Wolfrum, Gerhard; Sommer, Richard; and Klauke, Erich, B327,109.
Sony Corporation: *See—*
Okada, Takashi; and Utsunomiya, Kimitake, B399,304.
Sorbie, Thomas B.: *See—*
Dunham, James A.; Federle, August J.; and Sorbie, Thomas B., B442,859.
Sorenson, Marius Walter; Whiteside, Ross Clinton; and Hickner, Richard Allan. Polyols containing ketal groups and polyurethanes prepared therefrom. B363,205, Cl. 260-77.5AP.
Sorrells, Frank D.: *See—*
Lee, Charles A.; and Sorrells, Frank D., B313,594.
Sparks, Olin B. Method of constructing a box clip. B379,282, Cl. 93-1.00E.
Sparrendahl, Gunnar Erik William: *See—*
Edstrom, Nils Herbert; Lindqvist, Stig Gustaf Wilhelm; and Sparrendahl, Gunnar Erik William, B327,612.
Speakman, Edwin L. Process for depolymerizing amylaceous polymers. B408,030, Cl. 260-233.30R.
Spewock, Metro: *See—*
Bratkowski, Walter V.; and Spewock, Metro, B439,168.
Staal, Gerardus B.: *See—*
Henrick, Clive A.; and Staal, Gerardus B., B350,708.
Standard Oil Company, The: *See—*
Wardlow, Eddie, Jr., B386,592.
Stapley, Edward O.; and Mata, Justo M., to Merck & Co., Inc. Preparation of antibiotics by fermentation. B331,417, Cl. 195-80.00R.
Stapley, Edward O.; and Mata, Justo M. Antibiotic production. B367,661, Cl. 195-80.00R.
Starkweather, Gary K.; and Kowalski, Robert P., to Xerox Corporation. Flying spot scanner with scan detection. B309,860, Cl. 178-7.600.
Stauffer Chemical Company: *See—*
Brokke, Mervin E., B354,979.
Hyatt, David Ernest, B023,046.
Stauffer, Reuben Laverne. Half-bridge audio amplifier. B328,164, Cl. 330-17.000.
Stearns, Charles R.: *See—*
Weinman, James; and Stearns, Charles R., B204,161.
Stein, Stanley, to Hoffmann-La Roche Inc. Fluorescene protein and peptide analyzer. B409,220, Cl. 23-253.00R.
Stevens, Harry M., to Monsanto Company. Method of concentrating gallium. B333,928, Cl. 423-129.000.
Storck, Gerhard: *See—*
Barzynski, Helmut; Mark, Matthias; Storck, Gerhard; and Saenger, Dietrich, B392,242.
Storer, Christopher Charles: *See—*
Gauterin, Charles Rowland; Parke, John Pedlow; and Storer, Christopher Charles, B388,298.
Stover, William A.: *See—*
Anderson, Conroy D.; Carlson, David W.; Oleck, Stephen M.; and Stover, William A., B269,673.
Strack, Richard R.; and Smith, Merton L., to American Optical Corporation. Method of making improved fiber optic conduit. B359,174, Cl. 65-4.000.
Strella, Stephen; and Williams, Meurig W., to Xerox Corporation. Method of developing electrostatic latent images with pressure sensitive toner. B422,399, Cl. 117-21.000.
Strunk, Manfred; Kroschel, Heinz; and Voss, Alfred, to Dynamit Nobel Aktiengesellschaft. Process for the production of explosive devices surrounded by a case. B387,039, Cl. 86-1.00R.
Sugisawa, Masakazu, to Aisin Seiki Kabushiki Kaisha. Power steering mechanism. B310,149, Cl. 180-79.20R.
Sumitomo Chemical Company, Ltd.: *See—*
Inaba, Shigeho; Takahashi, Kei; Yamamoto, Michihiro; Mori, Kazuo; Ishizumi, Kikuo; and Yamamoto, Hisao, B252,947.
Summerfield, Martin: *See—*
Caveny, Leonard H.; and Summerfield, Martin, B357,039.

Sun Research and Development Co.: *See—*
Seitzer, Walter H.; and Shinn, Robert W., B323,568.
Sundstrand Syracuse, Inc.: *See—*
Schaller, Robert L., B332,811.
Surls, Joseph P.: *See—*
Basque, Max G.; Magner, James E.; Surls, Joseph P.; and West, Ben F., B336,978.
Sutton, Gary D., to Halliburton Company. Composition and process for the removal of asphaltenic containing organic deposits from surfaces. B359,946, Cl. 134-40.000.
Suzuki, Yasoji, to Tokyo Shibaura Electric Company, Ltd. Time sharing information circuit. B355,876, Cl. 307-205.000.
Suzumura, Nobuo: *See—*
Okada, Hiroshi; Horibe, Hiroshi; Mizuno, Yasushi; Yasui, Shoji; Ikegaya, Kazuo; and Suzumura, Nobuo, B321,018.
Swaanen, Petrus Henricus: *See—*
Bol, Arie; Van Ginkel, Johannes; van Der Schoot, Andrianus Henricus Maria; and Swaanen, Petrus Henricus, B387,687.
Swadner, Robert L.: *See—*
Gaines, Marvin E.; and Swadner, Robert L., B416,933.
Swodenk, Wolfgang; and Scharfe, Gerhard, to Bayer Aktiengesellschaft. Process for the production of allyl acetate. B330,536, Cl. 260-497.00A.
Sybron Corporation: *See—*
Woodhams, Glen Arthur, B372,823.
Symborski, Alex P. Apparatus for packaging linear material. B421,362, Cl. 242-18.00G.
Systron-Donner Corporation: *See—*
Sigworth, Frederick J., B307,110.
Szarvasi, Etienne; and Fontaine, Louis, to Lipha, Lyonnaise Industrielle Pharmaceutique. Substituted (nitrofuryl-acrylidene) hydrazines with antibacterial properties. B379,172, Cl. 424-275.000.
Takahashi, Kei: *See—*
Inaba, Shigeho; Takahashi, Kei; Yamamoto, Michihiro; Mori, Kazuo; Ishizumi, Kikuo; and Yamamoto, Hisao, B252,947.
Takemoto, Iwao: *See—*
Ashikawa, Mikio; and Takemoto, Iwao, B328,391.
Takeuchi, Akitoshi: *See—*
Fukuda, Yoshiharu; Onishi, Toshio; and Takeuchi, Akitoshi, B366,402.
Takeuchi, Yasuhisa: *See—*
Iizuka, Haruhiko; and Takeuchi, Yasuhisa, B416,834.
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, to Hitachi, Ltd.; Hitachi Electronics Ltd.; and Nippon Hoso Kyokai. Receiver for a still picture broadcasting signal. B393,163, Cl. 178-5.80R.
Tanaka, Kunihiko: *See—*
Iwai, Yoshihiro; and Tanaka, Kunihiko, B349,177.
Tangorra, Giorgio; Bertelli, Italo; and Calori, Giovanni, to Industrial Pirelli S. p. A. Pneumatic tire for vehicle wheels. B364,334, Cl. 152-375.000.
Tangsrud, Nils; and Devik, Ole Gabriel, to Sintef. Process for dehydrating frozen food particles. B363,337, Cl. 426-444.000.
Taniuchi, Osami: *See—*
Kinoshita, Minoru; and Taniuchi, Osami, B412,516.
Tanoue, Yoriko: *See—*
Miyoshi, Hiroshi; Mori, Hirohumi; and Tanoue, Yoriko, B213,211.
Tarneja, Krishan S.; and Bartko, John, to Westinghouse Electric Corporation. Fine tuning power diodes with irradiation. B339,699, Cl. 148-1.500.
Tarney, Robert Edward; and Verbanc, John Joseph, to du Pont de Nemours, E. I., and Company. Ozone treatment of elastomers. B324,495, Cl. 117-47.00A.
Tatsumi, Youji; Ito, Shohei; and Ishii, Katsutoshi. Internal grinder. B325,102, Cl. 51-3.000.
Teichmann, Gunter: *See—*
Bockmann, August; Teichmann, Gunter; and Rudolph, Hans, B380,926.
Teja, Mohindar Singh, to Deere & Company. Sealed coupling for exhaust pipe sections. B376,799, Cl. 285-337.000.
Telefonaktiebolaget LM Ericsson: *See—*
Edstrom, Nils Herbert; Lindqvist, Stig Gustaf Wilhelm; and Sparrendahl, Gunnar Erik William, B327,612.
Teletype Corporation: *See—*
Metz, Jack L., B307,677.
Terminal Data Corporation: *See—*
Burton, John S.; and Whitney, Ronald L., B430,140.
Texaco Inc.: *See—*
Braden, William Bernard, Jr., B295,770.
Davis, Charles W., B302,692.
Texas Instruments Incorporated: *See—*
Kravchuck, Robert T., B376,654.
Theidel, Hans: *See—*
Boehmke, Gunther; and Theidel, Hans, B189,772.
Boehmke, Gunther; and Theidel, Hans, B189,773.
Thelen, Alfred, to Balzers Patent-und Betelligungs-Aktiengesellschaft. Wide-band multilayer interference filter. B421,797, Cl. 350-164.000.
Thettu, Raghulinga R., to Xerox Corporation. Pressure roll for dry fuser apparatus. B425,770, Cl. 29-130.000.
Thiele, Gerd: *See—*
Keyl, Erwin; Ruthe, Helmut; and Thiele, Gerd, B432,424.
Thing, Frank. Exhaust backpressure warning system. B339,838, Cl. 340-52.00R.
Thomas, David F.; and Kafka, William L., to Waterous Company. Gear shift with positive lock means. B405,938, Cl. 192-114.000.
Thompson, David A., to International Business Machines Corporation. Three-legged magnetic recording head using a magnetorestive element. B371,787, Cl. 360-113.000.
Thomson-CSF: *See—*
Poinsard, Henri; and Lemoing, Jean, B361,443.
Thuillier, Jean Eugene: *See—*
Godfroid, Jean Jacques; and Thuillier, Jean Eugene, B353,986.
Tillman, Philip Robert: *See—*
Coderre, William Michael; Berglund, Carl Neil; and Tillman, Philip Robert, B361,347.
Toda, Soichiro: *See—*
Naito, Takayuki; Nakagawa, Susumu; and Toda, Soichiro, B371,085.
Todd, William W.; Ilfrey, William T.; and Lloyd, James R., to Exxon Production Research Company. Marine riser assembly. B390,679, Cl. 166-.500.
Togo, Kazushi: *See—*
Yamagata, Mineo; Akamatsu, Akira; and Togo, Kazushi, B265,727.
Tokyo Shibaura Electric Company, Ltd.: *See—*
Suzuki, Yasoji, B355,876.
Tomlinson, Richard William: *See—*
Burgess, Robin Henry; and Tomlinson, Richard William, B415,124.
Tonka Corporation: *See—*
Wamsley, Vernon R.; and Cuhel, Gerald A., B308,661.
Touchy, Wolfgang, to Siemens Aktiengesellschaft. Production of semiconductive monocrystals of group III-V semiconductor compounds. B339,218, Cl. 148-189.000.
Tozawa, Minoru. Cartridge tape player. B350,589, Cl. 360-94.000.
Traubel, Harro; and Konig, Klaus, to Bayer Aktiengesellschaft. Microporous sheet structures. B314,049, Cl. 260-2.5AY.
Trelleborg Rubber Company, Inc.: *See—*
Andersson, Sven E., B441,416.
Trepka, Robert D.: *See—*
Harrington, Joseph Kenneth; and Trepka, Robert D., B378,621.
Treuner, Uwe D.; and Breuer, Hermann. (Thiophosphon othic)cephalosporin derivatives. B258,687, Cl. 260-243.00C.
Trimnell, Donald; Shasha, Baruch S.; and Doane, William M., to United States of America, Agriculture. Thiolation of polysaccharides. B391,184, Cl. 260-216.000.
Triumph Werke Nurnberg, A.G.: *See—*
Decker, Herbert, B350,523.
Truemper, Joseph Tucker: *See—*
Broughton, Clifton William; and Truemper, Joseph Tucker, B310,271.
TRW Inc.: *See—*
Margulies, Robert S.; and Biddick, Royce E., B346,613.
Tsuboka, Eiichi: *See—*
Yoshino, Hirokazu; Yamaguchi, Tetsuo; Tsuboka, Eiichi; and Hatano, Hiroshi, B262,287.
Tung, Chin: *See—*
Chang, Hsu; Chen, Tien Chi; and Tung, Chin, B351,665.
Turnbull, John William, to du Pont de Nemours, E. I., and Company. Poly(meta-phenylene isophthalamide)powder. B262,599, Cl. 260-78.00S.
Tyrode, Alain: *See—*
Meister, Rene; and Tyrode, Alain, B343,240.
Udding, Anne C. Process for modifying diene polymers. B336,652, Cl. 260-94.70N.
Uehara, Takashi: *See—*
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, B393,163.
Uesugi, Kyozo, to Minolta Camera Kabushiki Kaisha. Compact varifocal lens assembly. B315,828, Cl. 350-187.000.
Umehara, Hanji; Kimura, Takashi; and Hamamoto, Hiroshi, to Kabushiki Kaisha Toyota. Metal dies or molds containing cooling channels by sintering powdered metals. B318,195, Cl. 75-208.00R.
Union Carbide Corporation: *See—*
Ertingshausen, Gerhard; and Byrd, Diane F., B314,977.
Lashley, Everett R., Jr., B367,739.
Vadla, Jostein J.; and Milner, Robert G., B430,385.
Union Oil Company of California: *See—*
Young, Dean Arthur, B302,998.
United Aircraft Corporation: *See—*
Green, Herbert; Guarino, Robert A.; and Fitzgerald, John H., B392,894.
United States of America
Agriculture: *See—*
Beal, Robert E., B328,200.
Berni, Ralph J.; Benerito, Ruth R.; and Pilkington, Mary W., B315,731.
Chance, Leon H., B328,205.
Donaldson, Darrell J.; Drake, George L., Jr.; Beninate, John V.; Reeves, Wilson A.; and Daigle, Donald J., B265,862.
Portnoy, Norman A.; Reine, Alden H.; and Arthur, Jett C., Jr., B348,558.
Trimnell, Donald; Shasha, Baruch S.; and Doane, William M., B391,184.
Air Force: *See—*
Ginssky, Willard R., B439,669.
Schmidt, Donald J., B278,491.

Segal, Joshua L., B407,357.
Army: *See—*
Gardner, Carl J., B112,422.
Huskins, Chester W., B024,017.
Huskins, Chester W., B024,018.
Johnston, James V., B385,210.
Jones, Marvin L.; and Booth, David W., B287,164.
Kosonocky, Stephan; and Post, Lloyd D., B403,140.
Reinnagel, Richard E., B433,587.
Sayles, David C., B064,868.
Sayles, David C., B078,331.
Wolterman, William G., B282,081.
Atomic Energy Commission: *See—*
Baldwin, Arlen R.; and Reinhardt, Thomas A., B351,926.
Brumleve, Thomas D.; Hicks, Mearle G.; and Jones, Milton O., B381,632.
Hadeishi, Tetsuo, B442,280.
Jepson, Bernhart E., B322,564.
Klett, Robert D., B345,422.
Roy, Prodyot; Simpson, James L.; and Aitken, Edward A., B467,684.
Silva, Arthur P. D.; and Fassel, Velmer A, both of, B327,899.
Walter, Carl E., B398,262.
National Aeronautics and Space Administration; administrator; with respect to an invention of:
Silver, Robert H.; and Kalfayan, Sarkis H. Strain gage mounting assembly. B382,261, Cl. 73-88.50R.
National Aeronautics and Space Administration: *See—*
Anderson, Willard W.; and Groom, Nelson J., B384,773.
U.S. Philips Corporation: *See—*
Bol, Arie; Van Ginkel, Johannes; van Der Schoot, Andrianus Henricus Maria; and Swaanen, Petrus Henricus, B387,687.
Hasker, Jan; and De Klerr, Jacobus Johannes Maria Joseph, B381,074.
United States Steel Corporation: *See—*
Clark, John O.; Rafferty, James B.; and Schindler, Donald G., B357,131.
University of California, The Regents of the: *See—*
Rapoport, Henry, B425,470.
University of Illinois Foundation: *See—*
Kansy, Robert; and Culton, Jon, B430,149.
University of Minnesota, The Regents of the: *See—*
Olson, Leslie C., B367,640.
Upchurch, William B.: *See—*
Smith, Robert D.; and Upchurch, William B., B346,044.
Upjohn Company, The: *See—*
Argoudelis, Alexander D.; Coates, John H.; and Sebek, Oldrich K., B424,462.
Kelly, Robert C., B315,363.
Porter, Lawrence C.; and Graves, Kenneth E., B294,673.
Urbanosky, Harold J., to Schlumberger Technology Corporation. Apparatus for testing earth formations composed of particles of various sizes. B407,736, Cl. 73-155.000.
Utsunomiya, Kimitake: *See—*
Okada, Takashi; and Utsunomiya, Kimitake, B399,304.
Vadla, Jostein J.; and Milner, Robert G., to Union Carbide Corporation. Cemented collector bar assemblies for aluminum cell carbon bottom block. B430,385, Cl. 204-243.00R.
Valentine, Lamar Travis, deceased (by Valentine, Ruth Elaine, executrix), to Welding Processes Company. Welding manipulator. B346,585, Cl. 228-25.000.
Valentine, Ruth Elaine, executrix: *See—*
Valentine, Lamar Travis, deceased, B346,585.
Van Boxtel, Antonius Marinus; and Gerritsma, Cornelis Jan. Method of providing transparent conductive electrodes on a transparent insulating support. B354,510, Cl. 117-211.000.
Vandenberghe, Antoon Leon: *See—*
Poot, Albert Lucien; Heugebaert, Frans Clement; Janssens, Wilhelmus; and Vandenberghe, Antoon Leon, B335,670.
van Der Schoot, Andrianus Henricus Maria: *See—*
Bol, Arie; Van Ginkel, Johannes; van Der Schoot, Andrianus Henricus Maria; and Swaanen, Petrus Henricus, B387,687.
Van Ginkel, Johannes: *See—*
Bol, Arie; Van Ginkel, Johannes; van Der Schoot, Andrianus Henricus Maria; and Swaanen, Petrus Henricus, B387,687.
Vanheertum, Johannes Josephus: *See—*
Ohlschlager, Hans; Riester, Oskar; Ghys, Theofiel Hubert; Verhille, Karel Eugeen; and Vanheertum, Johannes Josephus, B342,886.
Vare, Bobby G. Joint retention clip for a building wall structure. B331,557, Cl. 52-489.000.
Vaughan, Lawrence G.: *See—*
Kirchner, Jack R.; and Vaughan, Lawrence G., B323,127.
Veba-Chemie Aktiengesellschaft: *See—*
Voges, Heinz-Werner; and Ewers, Josef, B280,015.
Velker, Eugen; Bentz, Francis; and Nischk, Gunther, to Bayer Aktiengesellschaft. 2-Methylene propane phosphonic acid esters. B311,413, Cl. 260-932.000.
Veltges, Helmut: *See—*
Frazen, Gustav; and Veltges, Helmut, B376,742.
Venkatu, Doulatabad A., to Owens-Illinois, Inc. Process for doping silicon semiconductor using an impregnated refractory dopant source. B351,348, Cl. 148-189.000.
Verbanc, John Joseph: *See—*
Tarney, Robert Edward; and Verbanc, John Joseph, B324,495.
Verhille, Karel Eugeen: *See—*
Ohlschlager, Hans; Riester, Oskar; Ghys, Theofiel Hubert; Verhille, Karel Eugeen; and Vanheertum, Johannes Josephus, B342,886.
Versluis, Jan; Rutten, Hendrikus S.; and Kruisman, Gerard. Single buoy mooring system. B379,955, Cl. 9-8.00P.
Vickery, Glenn C., to Basic Incorporated. Metal oxide paste dispersions and use as curing agents. B388,580, Cl. 260-28.50B.
Vidrio, Horacio, to Miles Laboratories, Inc. Method of producing vasodilation using certain 3-substituted-quinazoline derivatives. B336,946, Cl. 424-251.000.
Vieri, Bruno John, to Xerox Corporation. High power regulated d. c. supply. B363,457, Cl. 321-47.000.
Vilain, Victor A.: *See—*
Froment, Daniel A.; Laurent, Henri; and Vilain, Victor A., B368,128.
Viracola, Joseph R. System including a pressure switch for counting axles and classifying vehicles. B351,421, Cl. 340-38.00R.
Visek, Kenneth E.: *See—*
Daniher, Francis A.; and Visek, Kenneth E., B285,796.
Vitous, Charles J., to Cory Corporation. Beverage chamber filter. B359,187, Cl. 99-303.000.
Vittore, Lorenzo: *See—*
Coraluppi, Enzo; De Saraca, Elio; and Vittore, Lorenzo, B311,317.
Vittoz, Eric Andre: *See—*
Oguey, Henri J.; and Vittoz, Eric Andre, B459,425.
Vogel, Herman J., Jr. Closure device of plastic for tubes and containers. B314,271, Cl. 215-320.000.
Voges, Heinz-Werner; and Ewers, Josef, to Veba-Chemie Aktiengesellschaft. Tetraalkyl pyrazines from alkanolamines by copper-chromite catalysis. B280,015, Cl. 260-250.00B.
Volpe, John W., to Raytheon Company. Capacitance matrix keyboard. B289,523, Cl. 340-365.00C.
Von Der Eltz, Hans-Ulrich; Lehinant, Armand; and Maier, Hans-Peter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the single-bath dyeing of unmoldified polyolefin fibers with metal-containing phthalocyanine dyestuffs. B336,902, Cl. 8-62.000.
Von Rosenberg, Hermann E.: *See—*
Knudsen, Christian W.; and Von Rosenberg, Hermann E., B444,614.
von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, to Warner-Lambert Company. Substituted-o-hydroxy-omega-(methylsulfinyl)-acetophenones and process for producing same. B438,053, Cl. 260-592.000.
Vorwerk, Richard: *See—*
Ward, Charles Theodore; Mathis, Donald Lee; Radcliff, Frank Taylor; and Vorwerk, Richard, B384,658.
Voss, Alfred: *See—*
Strunk, Manfred; Kroschel, Heinz; and Voss, Alfred, B387,039.
Wacker Chemie GmbH: *See—*
Nitzsche, Siegfried; Hittmair, Paul; Wohlfarth, Ernst; and Louis, Eckhart, B397,027.
Wadsworth, Francis T.: *See—*
Wolford, Lionel T.; and Wadsworth, Francis T., B313,900.
Wagner, Robert J., to Ailis-Chalmers Corporation. Cable controlled draft load and position sensing linkage. B365,490, Cl. 172-9.000.
Walter, Carl E., to United States of America, Atomic Energy Commission. Apparatus for reducing shock and overpressure. B398,262, Cl. 102-21.600.
Wamsley, Vernon R.; and Cuhel, Gerald A., to Tonka Corporation. Toy vehicle kit having locking pin through engine, chassis and pan. B308,661, Cl. 46-17.000.
Wandel, Martin; Salamon, Manfred; Dornheim, Gotz Gotmar; and Kuhlman, Bernard, to Bayer Aktiengesellschaft. Stitched webs of fleeces of synthetic fibers and method of making same. B286,913, Cl. 161-50.000.
Waniishi, Kenji; and Ninomiya, Koichiro, to Hitachi, Ltd. Cooking utensil. B290,328, Cl. 259-108.000.
Wanmaker, Willem Lambertus; and Radielovic, Dragutin. Method of manufacturing a luminescent alkaline earth halophosphate. B288,018, Cl. 252-301.40P.
Ward, Charles Theodore; Mathis, Donald Lee; Radcliff, Frank Taylor; and Vorwerk, Richard, to Combustion Engineering, Inc. Remotely movable platform. B384,658, Cl. 91-411.00R.
Ward, Dilys Annie Jane, administratrix: *See—*
Ward, , deceased, B304,687.
Ward, John W.; and Lybrand, Robert A., to A. H. Robins Company Incorporated. Method of relieving the discomfort of pharyngitis. B371,805, Cl. 424-315.000.
Ward, , deceased (by Ward, Dilys Annie Jane, administratrix), to Massey-Ferguson-Perkins Limited. Reversible hopper partition for combine drill. B304,687, Cl. 222-134.000.
Wardlow, Eddie, Jr., to Standard Oil Company, The. Thermally-stable high nitrile resins and method for producing the same. B386,592, Cl. 260-45.9NC.
Ware, Richard E. Antibacterial laundry oil and dust control composition. B292,054, Cl. 252-88.000.
Warner-Lambert Company: *See—*
von Strandtmann, Maximilian; Shavel, John, Jr.; Klutchko, Sylvester; and Cohen, Marvin, B438,053.
Warren, Anthony Charles; and Nicholls, Bryan Frederick. Electrical systems and apparatus. B352,950, Cl. 318-138.000.
Waterous Company: *See—*
Thomas, David F.; and Kafka, William L., B405,938.

Watson, George A.; and Bollinger, John J., to Rockwell International Corporation. Timing control circuit for electronic fuel injection system. B354,296, Cl. 235-92.0MT.
Watts, Ralph E. Refuse burner apparatus. B364,022, Cl. 110-8.00C.
Wayne, Flora. Ironing board attachment. B390,732, Cl. 248-311.000.
Weerstra, Ronald J., to Xerox Corporation. Fluid pen assembly. B351,222, Cl. 346-74.0ES.
Wegmann, Jacques; Becker, Carl; Zwahlen, Guenther; and Kuster, Werner. Amine salt of a dyestuff in a ketone solution. B348,383, Cl. 8-1.0XA.
Weil-McLain Company Inc.: *See—*
Deters, Elmer M., B405,305.
Weimer, Paul Kessler, to RCA Corporation. Charge transfer circuits. B309,755, Cl. 178-7.100.
Weiner, Joel Alan: *See—*
Feldstein, Nathan; and Weiner, Joel Alan, B415,113.
Weinman, James; and Stearns, Charles R. Emission control method and apparatus for smokestacks or other waste gas discharge stacks. B204,161, Cl. 126-307.00A.
Welding Processes Company: *See—*
Valentine, Lamar Travis, deceased, B346,585.
Wendling, John E., to International Harvester Company. Turn signal and hazard warning switch. B323,191, Cl. 200-61.270.
Wernick, Jack Harry: *See—*
Bachmann, Klaus Jurgen; Buehler, Ernest; Shay, Joseph Leo; and Wernick, Jack Harry, B382,021.
West, Ben F.: *See—*
Basque, Max G.; Magner, James E.; Surls, Joseph P.; and West, Ben F., B336,978.
Western Electric Company, Incorporated: *See—*
Coucoulas, Alexander, B413,006.
Dembiak, Matthew R.; and Glosek, John J., B455,775.
Westfalia Separator A. G.: *See—*
Niemeyer, Heinrich, B422,467.
Westinghouse Electric Corporation: *See—*
Avellar, Karl B.; and Buchanan, James E., B322,239.
Bratkowski, Walter V.; and Spewock, Metro, B439,168.
Cuzzo, John, B288,627.
Demarest, Donald J.; and Heytmeijer, Herman R., B345,390.
Holden, Abe N., B377,172.
Justice, James W. H., B364,163.
Klein, Gerald I., B432,373.
Lauer, Charles A.; and Fluet, Francis A., B392,696.
Lehmann, Willi, B407,728.
Noreika, Alexander J.; and Francombe, Maurice H., B361,734.
Putman, Richard E., B300,004.
Reuther, John F., B308,892.
Ricks, Herbert E., B399,766.
Tarneja, Krishan S.; and Bartko, John, B339,699.
Westlake, David Jack; and Wriglesworth, John. Catalysts and catalytic processes. B295,860, Cl. 260-532.000.
Westlin, Karl L., to American Air Filter, Inc. High efficiency unit filter. B408,749, Cl. 55-500.000.
Weston Instruments Inc.: *See—*
Andreaggi, Joseph R.; and Zenuch, George, B367,040.
Westvaco Corporation: *See—*
Batcher, Kenneth Ray, B392,732.
White, Philip F.: *See—*
Pedersen, Harry; and White, Philip F., B391,437.
Whitehurst, Darrell D.: *See—*
Rodewald, Paul G.; and Whitehurst, Darrell D., B418,153.
Whiteside, Ross Clinton: *See—*
Sorenson, Marius Walter; Whiteside, Ross Clinton; and Hickner, Richard Allan, B363,205.
Whitney Manufacturing Company: *See—*
Whitney, Walter D., B427,631.
Whitney, Ronald L.: *See—*
Burton, John S.; and Whitney, Ronald L., B430,140.
Whitney, Walter D., to Whitney Manufacturing Company. Apparatus for straightening automobile frames and the like. B427,631, Cl. 72-461.000.
Wiesner, Harold J. Electroplating a gold-platinum alloy and electrolyte therefor. B445,740, Cl. 204-43.00G.
Wiggins, Glenn C.; Kreh, Marvin J.; and Davis, Robert S., to Dow Chemical Company, The. Oriented saran coextrudate. B237,953, Cl. 161-254.000.
Willett, Robert Joseph: *See—*
Bonser, Richard Harlan; and Willett, Robert Joseph, B411,633.
Williams, Lary Lynn, to Deere & Company. Vehicle instrument panel cover assembly. B387,331, Cl. 180-90.000.
Williams, Meurig W.: *See—*
Strella, Stephen; and Williams, Meurig W., B422,399.
Williamson, Roger C.: *See—*
Harper, Earl F.; and Williamson, Roger C., B366,790.
Harper, Earl F.; and Williamson, Roger C., B366,861.
Willis, Frank M.: *See—*
Brown, Theodore E., Jr.; and Willis, Frank M., B417,299.
Wilson, James D.: *See—*
Cohen, Morrel H.; Miles, Malcolm G.; and Wilson, James D., B318,122.
Winter, Ernst, to Jenoptik Jena G.m.b.H. Monochromator with rotatable lens. B320,603, Cl. 356-100.000.
Wohlfarth, Ernst: *See—*
Nitzsche, Siegfried; Hittmair, Paul; Wohlfarth, Ernst; and Louis, Eckhart, B397,027.
Wolford, Lionel T.; and Wadsworth, Francis T., to Cities Service Oil Company. Flame-retardant composition. B313,900, Cl. 260-45.75B.
Wolfram, Karl-Heinz Arno: *See—*
Dauner, Bertram Wilhelm-Georg; Marx, Helmut Hermann; and Wolfram, Karl-Heinz Arno, B351,939.
Wolfrum, Gerhard; Sommer, Richard; and Klauke, Erich, to Bayer Aktiengesellschaft. Phenyl-azo-indole compounds. B327,109, Cl. 260-165.000.
Wolterman, William G., to United States of America, Army. Grenade with fuze. B282,081, Cl. 102-56.000.
Woodhams, Glen Arthur, to Sybron Corporation. Distribution valve for dental equipment. B372,823, Cl. 137-637.100.
Woodruff, Benjamin T. Formaldehyde-hexamethylene tetramine compositions. B311,977, Cl. 252-182.000.
Wright, Carl Leonard; and Beacham, Harry Hoyt, to FMC Corporation. Composition comprising a diallylic phthalate polymer and a polyphenylene ether. B420,514, Cl. 260-874.000.
Wriglesworth, John: *See—*
Westlake, David Jack; and Wriglesworth, John, B295,860.
Wylot, James Matthew; and Greco, Edgar Joseph, to Eastman Kodak Company. High index optical glass. B286,499, Cl. 106-47.00Q.
Wythe, Frederick Joseph, to Emhart Corporation. Pass through shears for motlen glass feeder. B440,863, Cl. 65-334.000.
Xerox Corporation: *See—*
Bean, Lloyd F., B327,363.
Bergfjord, John Alf; Grammatica, Steven James; and Radler, Richard William, B337,787.
Berkes, John S.; Hillegas, William J.; and Ing, Samuel W., B283,124.
Howard, Anthony, B339,675.
Jeromin, Lothar S., B323,666.
Starkweather, Gary K.; and Kowalski, Robert P., B309,860.
Strella, Stephen; and Williams, Meurig W., B422,399.
Thettu, Raghulinga R., B425,770.
Vieri, Bruno John, B363,457.
Weerstra, Ronald J., B351,222.
Yagiela, Frank D., to General Motors Corporation. Gear inspection tool. B325,261, Cl. 33-179.50C.
Yamagata, Mineo; Akamatsu, Akira; and Togo, Kazushi, to Ajinomoto Co., Inc. Process for manufacturing leather-like materials. B265,727, Cl. 117-135.500.
Yamaguchi, Tetsuo: *See—*
Yoshino, Hirokazu; Yamaguchi, Tetsuo; Tsuboka, Eiichi; and Hatano, Hiroshi, B262,287.
Yamamoto, Hisao: *See—*
Inaba, Shigeho; Takahashi, Kei; Yamamoto, Michihiro; Mori, Kazuo; Ishizumi, Kikuo; and Yamamoto, Hisao, B252,947.
Yamamoto, Michihiro: *See—*
Inaba, Shigeho; Takahashi, Kei; Yamamoto, Michihiro; Mori, Kazuo; Ishizumi, Kikuo; and Yamamoto, Hisao, B252,947.
Yamamoto, Takeshi, to Mitsubishi Denki Kabushiki Kaisha. Method of electrically depositing glass particles on objective body. B336,345, Cl. 204-181.000.
Yamamoto, Takuo: *See—*
Nakamura, Kenji; Fukuyama, Kunihiko; and Yamamoto, Takuo, B354,145.
Yamane, Hisakichi: *See—*
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, B393,163.
Yanagimachi, Akio: *See—*
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, B393,163.
Yananton, Patrick Michael: *See—*
Cekoric, Thomas, Jr.; and Yananton, Patrick Michael, B400,080.
Yasui, Shoji: *See—*
Okada, Hiroshi; Horibe, Hiroshi; Mizuno, Yasushi; Yasui, Shoji; Ikegaya, Kazuo; and Suzumura, Nobuo, B321,018.
York, Edward R.: *See—*
Caricchio, Jerome J., Jr.; Saxenmeyer, George J., Jr.; and York, Edward R., B450,499.
Yoshino, Hirokazu; Yamaguchi, Tetsuo; Tsuboka, Eiichi; and Hatano, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Digital Recording and Reproducing System employing Δ PCM. B262,287, Cl. 360-32.000.
Yoshino, Takehiko: *See—*
Takezawa, Teruhiro; Masuda, Michio; Nabeyama, Hiroaki; Mohri, Katsuo; Fukuda, Masaaki; Kayano, Tatsuo; Uehara, Takashi; Sawabe, Eiichi; Yoshino, Takehiko; Yamane, Hisakichi; and Yanagimachi, Akio, B393,163.
Yost, Kenneth J., to Coate Burial Vault, Inc. Aerobic sewage treatment system. B340,833, Cl. 210-199.000.
Young, Dean Arthur, to Union Oil Company of California. Hydrogenative conversion catalysts. B302,998, Cl. 252-455.00Z.
Young, Robert E.: *See—*
Julian, Clarence L.; and Young, Robert E., B356,724.
Yuminaka, Takeo: *See—*
Iwasaka, Tatsuo; Inuzuka, Isao; Nakamura, Minoru; Yuminaka, Takeo; and Morita, Masanobu, B341,322.
Zappia, Anthony T., to Ball Brothers Service Corporation. Plug gauge. B375,652, Cl. 33-178.00R.

Zell, Dale Richard; and Martin, John Leroy, to AMP Incorporated. Power isolated transmission cable assembly. B456,346, Cl. 174-36.000.
Zemke, Bruce E.: *See*—
Bond, William D.; and Zemke, Bruce E., B394,188.
Zenuch, George: *See*—
Andreaggi, Joseph R.; and Zenuch, George, B367,040.
Zobbi, Robert G.: *See*—
Skomoroski, Robert M.; and Zobbi, Robert G., B435,844.
Zolcon Corporation: *See*—
Henrick, Clive A.; and Staal, Gerardus B., B350,708.
Zwahlen, Guenther: *See*—
Wegmann, Jacques; Becker, Carl; Zwahlen, Guenther; and Kuster, Werner, B348,383.

CLASSIFICATION OF PUBLISHED PATENT APPLICATIONS PUBLISHED UNDER TRIAL VOLUNTARY PROTEST PROGRAM

PUBLISHED JANUARY 28, 1975

DOCUMENT NO.	CLASS/SUBCLASS	CATEGORY
B 23,046	260/653.7	CHEM
B 24,017	149/19.2	CHEM
B 24,018	260/80.7	CHEM
B 64,868	149/19.3	CHEM
B 78,331	149/19.8	CHEM
B 112,422	102/70.2R	GEN & MECH
B 129,999	260/249.6	CHEM
B 150,560	152/330	GEN & MECH
B 176,995	156/79	CHEM
B 178,475	260/525	CHEM
B 189,772	260/239.65	CHEM
B 189,773	260/308R	CHEM
B 190,679	260/145A	CHEM
B 198,810	117/34	CHEM
B 204,161	126/307A	GEN & MECH
B 207,272	75/1	CHEM
B 211,786	260/553A	CHEM
B 213,211	260/2.5B	CHEM
B 220,683	117/62	CHEM
B 222,188	340/72	ELEC
B 223,621	264/45	CHEM
B 224,323	260/570.8TC	CHEM
B 233,383	260/346.3	CHEM
B 233,741	260/78.5R	CHEM
B 235,011	96/109	CHEM
B 235,925	356/73	GEN & MECH
B 236,609	204/298	CHEM
B 237,953	161/254	CHEM
B 239,289	358/75	ELEC
B 241,433	260/28.5AV	CHEM
B 245,194	260/79.5C	CHEM
B 248,916	117/239	CHEM
B 251,109	156/306	CHEM
B 251,345	166/281	GEN & MECH
B 251,635	156/306	CHEM
B 252,947	260/251QB	CHEM
B 254,211	260/497A	CHEM
B 254,708	260/505C	CHEM
B 255,756	260/209R	CHEM
B 256,334	425/461	GEN & MECH
B 256,936	260/883	CHEM
B 258,687	260/243C	CHEM
B 259,236	280/150B	GEN & MECH
B 259,274	117/15	CHEM
B 260,455	219/76	ELEC
B 260,945	252/437	CHEM
B 261,378	98/2.15	GEN & MECH
B 261,828	424/273	CHEM
B 262,241	264/54	CHEM
B 262,287	360/32	ELEC
B 262,378	424/137	CHEM
B 262,599	260/78S	CHEM
B 264,257	117/62	CHEM
B 264,833	156/3	CHEM
B 265,369	252/389A	CHEM
B 265,727	117/135.5	CHEM
B 265,862	260/29.6MN	CHEM
B 266,195	195/66R	CHEM
B 269,673	423/213.7	CHEM
B 270,089	260/497A	CHEM
B 271,104	260/306.7R	CHEM
B 274,945	425/326B	GEN & MECH
B 275,426	204/1T	CHEM
B 276,271	426/3	CHEM
B 276,560	426/113	CHEM
B 276,993	260/2.5M	CHEM
B 277,449	117/21	CHEM
B 278,491	343/12A	ELEC
B 278,991	117/33.3	CHEM
B 279,583	260/78L	CHEM
B 280,015	260/250B	CHEM
B 280,395	317/230	ELEC
B 281,341	260/247	CHEM
B 281,943	426/523	CHEM
B 282,081	102/56	GEN & MECH
B 282,252	425/376	GEN & MECH
B 282,390	123/1R	GEN & MECH
B 282,819	75/118	CHEM
B 283,124	96/27R	CHEM
B 283,300	8/169	CHEM
B 284,297	197/54	GEN & MECH
B 284,427	172/375	GEN & MECH
B 285,200	252/182	CHEM
B 285,796	260/561N	CHEM
B 286,499	106/47Q	CHEM
B 286,614	175/209	GEN & MECH
B 286,913	161/50	CHEM
B 287,164	149/19.2	CHEM
B 287,270	244/46	GEN & MECH
B 287,275	156/416	CHEM
B 287,373	197/49	GEN & MECH
B 288,018	252/301.4P	CHEM
B 288,627	235/183	ELEC
B 288,638	156/161	CHEM
B 289,175	27/2	GEN & MECH
B 289,471	242/56.8	GEN & MECH
B 289,523	340/365C	ELEC
B 289,883	75/124	CHEM
B 290,328	259/108	GEN & MECH
B 291,104	8/91	CHEM
B 291,694	260/92.1	CHEM
B 292,054	252/88	CHEM
B 292,126	117/200	CHEM
B 292,140	260/884	CHEM
B 292,300	264/210F	CHEM
B 292,563	210/71	CHEM
B 293,378	260/37EP	CHEM
B 293,437	74/710.5	GEN & MECH
B 294,103	57/35	GEN & MECH
B 294,579	82/11	GEN & MECH
B 294,673	264/40	CHEM
B 295,481	123/8.01	GEN & MECH
B 295,674	179/15AP	ELEC
B 295,770	166/274	GEN & MECH
B 295,860	260/532	CHEM
B 299,267	220/23.83	GEN & MECH
B 300,004	235/151.12	ELEC
B 300,353	175/364	GEN & MECH
B 302,271	128/214R	GEN & MECH
B 302,692	123/32ST	GEN & MECH
B 302,836	156/192	CHEM
B 302,998	252/455Z	CHEM
B 303,011	317/103	ELEC
B 303,702	106/268	CHEM
B 304,687	222/134	GEN & MECH
B 305,417	252/131	CHEM
B 305,597	82/19	GEN & MECH
B 305,868	73/492	GEN & MECH
B 305,881	65/110	CHEM
B 306,655	131/2	GEN & MECH
B 306,829	260/326.25	CHEM
B 306,938	161/167	CHEM
B 307,110	179/1P	ELEC
B 307,677	197/1R	GEN & CHEM
B 308,661	46/17	GEN & MECH
B 308,892	322/15	ELEC
B 309,207	340/147R	ELEC
B 309,499	280/150AB	GEN & MECH
B 309,681	328/151	ELEC
B 309,755	178/7.1	ELEC
B 309,756	148/171	CHEM
B 309,860	178/7.6	ELEC
B 310,149	180/79.2R	GEN & MECH
B 310,271	252/444	CHEM
B 310,740	252/547	CHEM
B 311,313	156/425	CHEM
B 311,317	96/56.1	CHEM
B 311,413	260/932	CHEM
B 311,910	51/13	GEN & MECH
B 311,977	252/182	CHEM
B 312,139	264/297	CHEM
B 312,477	260/29.6WB	CHEM
B 313,029	117/93.1R	CHEM
B 313,098	55/345	CHEM

DOCUMENT NO.	CLASS/SUBCLASS	CATEGORY
B 313,531	424/251	CHEM
B 313,594	128/287	GEN & MECH
B 313,900	260/45.75B	CHEM
B 314,049	260/2.5AY	CHEM
B 314,255	260/92.8R	CHEM
B 314,271	215/320	GEN & MECH
B 314,489	8/169	CHEM
B 314,800	117/139.4	CHEM
B 314,977	23/230B	CHEM
B 315,363	260/307F	CHEM
B 315,397	423/481	CHEM
B 315,731	8/185	CHEM
B 315,828	350/187	GEN & MECH
B 316,014	117/212	CHEM
B 316,239	123/139ST	GEN & MECH
B 316,422	260/524N	CHEM
B 316,851	62/499	GEN & MECH
B 316,917	260/666A	CHEM
B 317,080	260/78UA	CHEM
B 317,347	136/234	CHEM
B 317,624	202/174	CHEM
B 318,122	260/327M	CHEM
B 318,195	75/208R	CHEM
B 318,618	226/178	GEN & MECH
B 318,640	204/256	CHEM
B 318,745	51/101R	GEN & MECH
B 319,226	96/76R	CHEM
B 319,339	117/37R	CHEM
B 319,402	307/304	ELEC
B 319,414	117/126GQ	CHEM
B 320,261	117/119.6	CHEM
B 320,452	96/114	CHEM
B 320,603	356/100	GEN & MECH
B 321,018	128/2.05P	GEN & MECH
B 321,101	236/34	GEN & MECH
B 321,533	119/5	GEN & MECH
B 321,938	260/566R	CHEM
B 322,182	260/281	CHEM
B 322,239	235/151.31	ELEC
B 322,564	423/2	CHEM
B 322,621	117/1.7	CHEM
B 322,777	53/7	GEN & MECH
B 323,127	423/588	CHEM
B 323,191	200/61.27	ELEC
B 323,203	235/92PD	ELEC
B 323,568	208/10	CHEM
B 323,666	118/637	GEN & MECH
B 324,495	117/47A	CHEM
B 324,503	264/117	CHEM
B 324,505	260/29.7SQ	CHEM
B 324,739	425/131.1	GEN & MECH
B 324,879	106/298	CHEM
B 325,102	51/3	GEN & MECH
B 325,261	33/179.5C	GEN & MECH
B 326,514	96/67	CHEM
B 327,109	260/165	CHEM
B 327,363	96/1.5	CHEM
B 327,612	179/15AT	ELEC
B 327,674	180/69R	GEN & MECH
B 327,899	117/33.5R	CHEM
B 328,164	330/17	ELEC
B 328,200	426/177	CHEM
B 328,205	8/116P	CHEM
B 328,210	260/462R	CHEM
B 328,391	313/365	ELEC
B 328,870	19/66R	GEN & MECH
B 329,115	197/151	GEN & MECH
B 329,476	252/32.7E	CHEM
B 329,612	156/96	CHEM
B 329,787	260/309.6	CHEM
B 329,816	264/141	CHEM
B 330,354	252/437	CHEM
B 330,536	260/497A	CHEM
B 330,828	130/24	GEN & MECH
B 331,417	195/80R	CHEM
B 331,557	52/489	GEN & MECH
B 331,895	340/378R	ELEC
B 332,527	426/190	CHEM
B 332,811	51/103TF	GEN & MECH
B 333,876	360/17	ELEC
B 333,928	423/129	CHEM
B 334,251	194/10	GEN & MECH
B 334,868	178/7.1	ELEC
B 334,985	260/652.5R	CHEM
B 335,670	117/36.2	CHEM
B 335,741	179/1GQ	ELEC
B 335,773	219/378	ELEC
B 336,129	203/7	CHEM
B 336,243	260/343.2R	CHEM
B 336,345	204/181	CHEM
B 336,566	21/2.7A	CHEM
B 336,652	260/94.7N	CHEM
B 336,902	8/62	CHEM
B 336,946	424/251	CHEM
B 336,978	423/611	CHEM
B 337,235	264/255	CHEM
B 337,409	252/467	CHEM
B 337,442	164/280	GEN & MECH
B 337,703	324/158D	ELEC
B 337,787	96/1.5	CHEM
B 339,059	242/198	GEN & MECH
B 339,218	148/189	CHEM
B 339,675	271/173	GEN & MECH
B 339,699	148/1.5	CHEM
B 339,838	340/52R	ELEC
B 340,212	340/173PL	ELEC
B 340,767	191/29	GEN & MECH
B 340,833	210/199	CHEM
B 341,322	340/19R	ELEC
B 341,579	72/10	GEN & MECH
B 342,084	161/67	CHEM
B 342,423	260/80.78	CHEM
B 342,763	184/1R	GEN & MECH
B 342,886	96/1.6	CHEM
B 343,136	117/132B	CHEM
B 343,240	310/9.1	ELEC
B 343,506	261/97	CHEM
B 343,577	340/347NT	ELEC
B 344,203	358/6	ELEC
B 344,479	424/258	CHEM
B 345,060	260/674A	CHEM
B 345,384	219/216	ELEC
B 345,390	252/301.4P	CHEM
B 345,422	423/445	CHEM
B 345,527	323/48	ELEC
B 345,567	305/11	GEN & MECH
B 346,044	264/63	CHEM
B 346,145	52/456	GEN & MECH
B 346,210	219/121LM	ELEC
B 346,350	204/159.23	CHEM
B 346,487	343/16M	ELEC
B 346,585	228/25	GEN & MECH
B 346,613	136/36	CHEM
B 346,901	404/98	GEN & MECH
B 347,780	340/173LM	ELEC
B 348,083	260/154	CHEM
B 348,383	8/1XA	CHEM
B 348,495	315/408	ELEC
B 348,558	8/194	CHEM
B 349,141	224/45C	GEN & MECH
B 349,177	352/87	GEN & MECH
B 349,231	204/195P	CHEM
B 349,321	179/1PC	ELEC
B 349,948	179/84VF	ELEC
B 350,025	354/271	ELEC
B 350,143	64/14	GEN & MECH
B 350,219	423/300	CHEM
B 350,245	260/676R	CHEM
B 350,523	197/55	GEN & MECH
B 350,589	360/94	ELEC
B 350,708	260/485L	CHEM
B 350,843	277/170	GEN & MECH
B 351,055	417/516	GEN & MECH
B 351,218	260/2.5HB	CHEM
B 351,222	346/74ES	ELEC
B 351,348	148/189	CHEM
B 351,421	340/38R	ELEC
B 351,493	340/336	ELEC
B 351,535	172/146	GEN & MECH
B 351,590	260/23.7R	CHEM
B 351,598	179/100.4E	ELEC
B 351,665	340/174TF	ELEC
B 351,672	316/20	GEN & MECH
B 351,673	96/3	CHEM
B 351,735	73/61.1R	GEN & MECH
B 351,863	328/141	ELEC
B 351,883	137/596.15	GEN & MECH
B 351,926	136/83T	CHEM
B 351,939	101/415.1	GEN & MECH
B 352,445	219/131WR	ELEC
B 352,934	180/5R	GEN & MECH

DOCUMENT NO.	CLASS/SUBCLASS	CATEGORY
B 352,950	318/138	ELEC
B 352,965	242/56.9	GEN & MECH
B 353,317	2/3R	GEN & MECH
B 353,387	60/226R	GEN & MECH
B 353,546	51/8SP	GEN & MECH
B 353,986	424/275	CHEM
B 354,008	96/72	CHEM
B 354,098	424/195	CHEM
B 354,145	179/107FD	ELEC
B 354,296	235/92MT	ELEC
B 354,510	117/211	CHEM
B 354,889	29/241	GEN & MECH
B 354,979	260/326NS	CHEM
B 355,095	240/7.11J	ELEC
B 355,269	179/175.3A	ELEC
B 355,510	180/121	GEN & MECH
B 355,595	235/159	ELEC
B 355,876	307/205	ELEC
B 356,032	426/434	CHEM
B 356,253	23/288G	CHEM
B 356,602	340/149A	ELEC
B 356,724	123/117A	GEN & MECH
B 356,887	260/486D	CHEM
B 357,039	60/254	GEN & MECH
B 357,057	206/427	GEN & MECH
B 357,131	73/67.8S	GEN & MECH
B 357,402	252/58	CHEM
B 357,682	417/320	GEN & MECH
B 357,803	178/7.1	ELEC
B 358,174	404/15	GEN & MECH
B 358,244	74/360	GEN & MECH
B 358,311	148/147	CHEM
B 358,939	188/296	GEN & MECH
B 359,174	65/4	CHEM
B 359,187	99/303	GEN & MECH
B 359,540	169/28	GEN & MECH
B 359,740	404/112	GEN & MECH
B 359,791	48/211	CHEM
B 359,825	51/395	GEN & MECH
B 359,946	134/40	CHEM
B 359,947	315/389	ELEC
B 360,208	260/78R	CHEM
B 360,296	74/492	GEN & MECH
B 360,719	96/123	CHEM
B 360,910	310/242	ELEC
B 360,986	260/348R	CHEM
B 361,265	156/17	CHEM
B 361,347	313/514	ELEC
B 361,443	343/5CM	ELEC
B 361,569	179/15.55R	ELEC
B 361,604	354/321	ELEC
B 361,734	148/175	CHEM
B 361,743	204/98	CHEM
B 361,744	204/98	CHEM
B 362,589	350/75	GEN & MECH
B 363,205	260/77.5AP	CHEM
B 363,337	426/444	CHEM
B 363,457	321/47	ELEC
B 363,674	260/37EP	CHEM
B 363,892	73/118	GEN & MECH
B 363,962	214/6FA	GEN & MECH
B 364,022	110/8C	GEN & MECH
B 364,163	178/5.6	ELEC
B 364,241	72/407	GEN & MECH
B 364,334	152/375	GEN & MECH
B 364,528	200/61.88	ELEC
B 364,786	138/109	GEN & MECH
B 364,910	260/859	CHEM
B 365,371	148/188	CHEM
B 365,490	172/9	GEN & MECH
B 365,834	330/13	ELEC
B 365,841	179/100.41K	ELEC
B 365,855	271/111	GEN & MECH
B 366,287	355/18	GEN & MECH
B 366,402	106/109	CHEM
B 366,589	333/71	ELEC
B 366,790	260/671P	CHEM
B 366,861	260/671P	CHEM
B 367,021	340/242	ELEC
B 367,040	220/96	GEN & MECH
B 367,640	242/47.5	GEN & MECH
B 367,661	195/80R	CHEM
B 367,739	210/12	CHEM
B 367,812	227/131	GEN & MECH
B 368,081	173/48	GEN & MECH
B 368,128	260/543P	CHEM
B 368,387	339/278M	GEN & MECH
B 368,392	225/2	GEN & MECH
B 368,397	318/561	ELEC
B 368,862	424/251	CHEM
B 369,563	73/61.1R	GEN & MECH
B 369,607	260/239BF	CHEM
B 369,997	123/8.45	GEN & MECH
B 370,453	360/99	ELEC
B 370,706	252/321	CHEM
B 371,073	200/308	ELEC
B 371,085	260/210AB	CHEM
B 371,787	360/113	ELEC
B 371,805	424/315	CHEM
B 371,836	134/31	CHEM
B 372,823	137/637.1	GEN & MECH
B 373,051	204/44	CHEM
B 373,297	72/345	GEN & MECH
B 373,326	65/60	CHEM
B 373,428	305/21	GEN & MECH
B 375,220	48/197R	CHEM
B 375,652	33/178R	GEN & MECH
B 376,504	200/153J	ELEC
B 376,654	200/159R	ELEC
B 376,742	57/34R	GEN & MECH
B 376,799	285/337	GEN & MECH
B 377,172	60/39.65	GEN & MECH
B 377,683	72/122	GEN & MECH
B 377,833	251/35	GEN & MECH
B 377,869	172/9	GEN & MECH
B 378,621	260/347.2	CHEM
B 379,038	424/273	CHEM
B 379,172	424/275	CHEM
B 379,282	93/1E	GEN & MECH
B 379,955	9/8P	GEN & MECH
B 380,014	239/589	GEN & MECH
B 380,141	195/100	CHEM
B 380,310	318/480	ELEC
B 380,312	285/290	GEN & MECH
B 380,338	280/124R	GEN & MECH
B 380,446	260/345.2	CHEM
B 380,900	56/328R	GEN & MECH
B 380,926	106/308N	CHEM
B 381,074	313/448	ELEC
B 381,632	340/15	ELEC
B 381,847	340/172.5	ELEC
B 382,018	260/79.3R	CHEM
B 382,021	29/576	GEN & MECH
B 382,261	73/88.5R	GEN & MECH
B 382,290	192/86	GEN & MECH
B 382,783	235/61.11E	ELEC
B 382,798	72/209	GEN & MECH
B 382,840	280/456R	GEN & MECH
B 383,465	354/143	ELEC
B 383,581	260/683.58	CHEM
B 383,852	260/309	CHEM
B 384,499	156/213	CHEM
B 384,658	91/411R	GEN & MECH
B 384,773	244/165	GEN & MECH
B 385,210	73/516R	GEN & MECH
B 386,403	297/440	GEN & MECH
B 386,592	260/45.9NC	CHEM
B 387,039	86/1R	GEN & MECH
B 387,171	330/35	ELEC
B 387,331	180/90	GEN & MECH
B 387,363	329/145	ELEC
B 387,687	29/603	GEN & MECH
B 387,761	260/308R	CHEM
B 387,790	260/250Q	CHEM
B 387,818	55/85	CHEM
B 388,298	252/527	CHEM
B 388,580	260/28.5B	CHEM
B 388,701	204/258	CHEM
B 389,070	208/135	CHEM
B 389,295	310/75	ELEC
B 389,327	83/568	GEN & MECH
B 389,639	307/235R	ELEC
B 389,726	307/235A	ELEC
B 389,807	333/70R	ELEC
B 389,932	49/220	GEN & MECH
B 389,933	49/220	GEN & MECH
B 390,679	166/.5	GEN & MECH
B 390,732	248/311	GEN & MECH
B 390,738	260/75P	CHEM
B 391,184	260/216	CHEM
B 391,210	260/240A	CHEM
B 391,437	51/33W	GEN & MECH

DOCUMENT NO.	CLASS/SUBCLASS	CATEGORY
B 391,509	204/109	CHEM
B 391,675	250/666PY	CHEM
B 392,154	260/256.5R	CHEM
B 392,242	96/115R	CHEM
B 392,696	235/152	ELEC
B 392,732	162/347	CHEM
B 392,753	331/110	ELEC
B 392,894	343/7.7	ELEC
B 393,163	178/5.8R	ELEC
B 393,347	260/530N	CHEM
B 393,970	313/270	ELEC
B 394,088	340/146.1E	ELEC
B 394,188	123/122H	GEN & MECH
B 394,300	202/270	CHEM
B 394,712	324/73R	ELEC
B 395,478	313/105	ELEC
B 395,496	426/350	CHEM
B 395,671	48/210	CHEM
B 395,889	28/19	GEN & MECH
B 396,025	242/206	GEN & MECH
B 396,551	242/76	GEN & MECH
B 397,027	260/46.5G	CHEM
B 397,527	102/92.1	GEN & MECH
B 397,990	29/427	GEN & MECH
B 398,262	102/21.6	GEN & MECH
B 398,551	350/3.5	GEN & MECH
B 398,597	209/73	GEN & MECH
B 398,625	250/459	ELEC
B 399,292	5/286	GEN & MECH
B 399,304	307/254	ELEC
B 399,349	310/68D	ELEC
B 399,766	29/197	CHEM
B 400,080	195/103.5R	CHEM
B 400,293	260/30.8R	CHEM
B 400,310	303/7	GEN & MECH
B 401,133	73/1B	GEN & MECH
B 401,992	301/108SC	GEN & MECH
B 402,065	260/327M	CHEM
B 402,555	324/71R	ELEC
B 403,140	102/75	GEN & MECH
B 403,355	64/23.5	GEN & MECH
B 403,990	323/4	ELEC
B 403,996	260/649R	CHEM
B 404,290	339/17M	GEN & MECH
B 404,437	139/122W	GEN & MECH
B 405,132	137/625.5	GEN & MECH
B 405,136	352/10	GEN & MECH
B 405,137	352/10	GEN & MECH
B 405,160	242/195	GEN & MECH
B 405,248	197/36	GEN & MECH
B 405,305	417/26	GEN & MECH
B 405,360	73/362AR	GEN & MECH
B 405,495	123/8.01	GEN & MECH
B 405,938	192/114	GEN & MECH
B 406,065	260/32.8SB	CHEM
B 406,357	101/123	GEN & MECH
B 406,800	123/8.09	GEN & MECH
B 407,357	328/51	ELEC
B 407,728	252/301.4S	CHEM
B 407,736	73/155	GEN & MECH
B 408,030	260/233.3R	CHEM
B 408,380	350/96B	GEN & MECH
B 408,487	117/38	CHEM
B 408,749	55/500	CHEM
B 409,026	260/677R	CHEM
B 409,220	23/253R	CHEM
B 409,251	333/1.1	ELEC
B 409,657	321/5	ELEC
B 409,816	38/49	GEN & MECH
B 410,062	260/456R	CHEM
B 410,168	333/30R	ELEC
B 411,145	204/180G	CHEM
B 411,356	328/186	ELEC
B 411,483	208/139	CHEM
B 411,633	340/146.1C	ELEC
B 412,516	354/298	ELEC
B 412,619	260/29.6F	CHEM
B 412,867	123/119A	GEN & MECH
B 413,006	29/471.1	GEN & MECH
B 413,546	29/156.4R	GEN & MECH
B 414,129	260/615B	CHEM
B 414,288	423/277	CHEM
B 415,113	106/1	CHEM
B 415,124	260/92.8W	CHEM
B 415,845	96/35.1	CHEM
B 415,847	260/86.1E	CHEM
B 415,957	219/89	ELEC
B 415,977	318/434	ELEC
B 416,399	75/126C	CHEM
B 416,598	44/62	CHEM
B 416,710	260/77.5AP	CHEM
B 416,832	417/395	GEN & MECH
B 416,834	303/21BE	GEN & MECH
B 416,933	417/53	GEN & MECH
B 417,299	53/28	GEN & MECH
B 418,121	23/254EF	CHEM
B 418,153	252/441	CHEM
B 418,302	42/90	GEN & MECH
B 418,490	404/31	GEN & MECH
B 419,327	321/18	ELEC
B 419,481	417/220	GEN & MECH
B 420,016	219/10.57	ELEC
B 420,148	354/195	ELEC
B 420,514	260/874	CHEM
B 420,568	75/3	CHEM
B 421,026	357/63	ELEC
B 421,362	242/18G	GEN & MECH
B 421,383	62/20	CHEM
B 421,797	350/164	GEN & MECH
B 422,399	117/21	CHEM
B 422,467	233/19A	GEN & MECH
B 422,949	225/2	GEN & MECH
B 424,415	174/51	ELEC
B 424,462	195/80R	CHEM
B 424,572	418/142	GEN & MECH
B 424,748	57/34.5	GEN & MECH
B 425,035	350/229	GEN & MECH
B 425,345	299/1	GEN & MECH
B 425,470	260/243R	CHEM
B 425,539	83/27	GEN & MECH
B 425,541	356/2	GEN & MECH
B 425,572	260/297R	CHEM
B 425,770	29/130	GEN & MECH
B 426,674	260/683.41	CHEM
B 427,631	72/461	GEN & MECH
B 428,177	307/229	ELEC
B 428,795	321/69NL	ELEC
B 429,442	65/24	CHEM
B 430,106	55/230	CHEM
B 430,140	355/41	GEN & MECH
B 430,149	333/30R	ELEC
B 430,385	204/243R	CHEM
B 430,798	49/246	GEN & MECH
B 430,944	356/226	GEN & MECH
B 432,373	333/31A	ELEC
B 432,424	321/8C	ELEC
B 433,587	200/61.47	ELEC
B 435,343	260/294.8C	CHEM
B 435,844	204/43N	CHEM
B 437,172	42/49A	GEN & MECH
B 437,173	128/287	GEN & MECH
B 437,195	307/88.3	ELEC
B 437,450	174/68.5	ELEC
B 438,053	260/592	CHEM
B 438,706	65/60	CHEM
B 439,168	335/179	ELEC
B 439,669	89/12	GEN & MECH
B 440,863	65/334	CHEM
B 440,898	198/31AB	GEN & MECH
B 441,024	140/92.1	GEN & MECH
B 441,416	241/300	GEN & MECH
B 442,280	356/51	GEN & MECH
B 442,859	198/19	GEN & MECH
B 442,919	260/613R	CHEM
B 444,614	48/197R	CHEM
B 445,471	331/108D	ELEC
B 445,740	204/43G	CHEM
B 447,417	62/6	GEN & MECH
B 448,571	214/16.1ED	GEN & MECH
B 449,647	104/172B	GEN & MECH
B 450,499	204/47	CHEM
B 450,546	62/158	GEN & MECH
B 450,927	239/526	GEN & MECH
B 455,520	250/291	ELEC
B 455,775	264/40	CHEM
B 456,346	174/36	ELEC
B 459,425	307/225C	ELEC
B 461,872	315/8	ELEC
B 467,684	118/49.1	GEN & MECH
B 468,198	260/92.3	CHEM

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF JANUARY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. B. Chance Company: *See*—
Mahieu, William R.; Tackaberry, Robert S.; and Chance, Philip G., 3,863,187.

A. H. Robins Company, Incorporated: *See*—
Lunsford, Carl Dalton; and Cale, Albert Duncan, Jr., 3,862,938.
Welstead, William John, Jr., 3,862,982.

Abbott Laboratories: *See*—
Fluoret, George Rogelio, 3,862,926.

Abe, Kunihiro: *See*—
Taniguchi, Takashi; Abe, Kunihiro; and Sugimoto, Takashi, 3,862,881.

Abshier, James O., to United States of America, Air Force. Radar predictions from automated stereoplotter. 3,863,252, Cl. 343-5.00R.

Acheson Industries, Inc.: *See*—
Coniglio, James John; and Wiley, Robert Emerson, 3,863,116.

Acks, Robert S. Hydrosonic diving communication amplifier system. 3,863,027, Cl. 179-1.00D.

Action Industries, Inc.: *See*—
Metherell, Alexander F., 3,863,197.

Aerosol Techniques Incorporated: *See*—
Mace, Harry W.; and Presant, Fred, 3,863,005.

Aerospace Research, Inc.: *See*—
Galvin, Aaron A., 3,863,240.

AF Industries Inc.: *See*—
Fieser, Arthur H.; Anderson, Charles H.; and Mobley, Loreley S. (said Fieser and Anderson assors. to), 3,862,749.

AGA Aktiebolag: *See*—
Mogensen, Palne; Smars, Erik; and Kaij, Mats J., 3,863,107.
Wibom, Gustaf Hakan Oskar, 3,862,500.

Agridustrial Electronics, Inc.: *See*—
Vogel, Ronald F., 3,862,571.

Aida, Hiroyuki: *See*—
Tsuneishi, Norihiro; Miyabayashi, Yoshiyuki; Aida, Hiroyuki; and Takizawa, Hideo, 3,862,490.

Airco, Inc.: *See*—
Nayar, Harbhajan S., 3,862,840.

Aires, Ramon Hess: *See*—
Easter, Finis Claude; Aires, Ramon Hess; and Goldberg, Edwin Allen, 3,863,140.

Akamine, Takenori, to Matsushita Electric Industrial Co., Ltd. A guide drum apparatus for a video tape recorder and/or player. 3,863,269, Cl. 360-128.000.

Akkerman, Neil H.: *See*—
Fay, Clinton K.; and Akkerman, Neil H., 3,862,653.

Aktiebolaget Platmanufaktur: *See*—
Granseus, Folke Evert; and Borgstrom, Klas Ingvar Helmer, 3,862,816.

Aktiengesellschaft Adolph Sauer: *See*—
Porter, Allan William Henry, 3,862,650.

Akzona Incorporated: *See*—
De Wied, David; and Greven, Hendrik Marie, 3,862,928.

Alexander, Harry Arnold, to General Electric Company. Selectively controllable shift register and counter divider network. 3,863,224, Cl. 340-172.500.

Allegheny Ludlum Industries, Inc.: *See*—
Chivinsky, Joseph A., 3,862,484.

Allied Chemical Corporation: *See*—
Bedell, John R., 3,862,658.
Sifniades, Stylianos; Fuhrmann, Robert; and Tunick, Allen A., 3,862,985.

Allis-Chalmers Corporation: *See*—
Boyd, Donald R., 3,863,043.

Allison, Kenneth C.; and Cooley, William H. Electrode. 3,862,633, Cl. 128-2.06E.

Amalgamated Dental Company Limited, The: *See*—
Foster, John; and Walker, Richard John, 3,862,920.

Amana Refrigeration, Inc.: *See*—
Rosenberry, Harold H., 3,863,045.

American Air Filter Company, Inc.: *See*—
Getzin, Allan R., 3,862,903.

American Can Company: *See*—
Johnson, Donald Owen; and Marchiano, Anthony Rosario, 3,862,702.

American Cyanamid Company: *See*—
Lang, Stanley Albert, Jr.; Cohen, Elliott; and Sloboda, Adolph Edward, 3,863,010.

American Home Products Corporation: *See*—
Corbin, Alan, 3,863,011.
Grant, Norman H., 3,863,008.
Kim, Dong H.; and Santilli, Arthur A., 3,862,948.
Sarantakis, Dimitrios; and McKinley, Wayne A., 3,862,925.
Sellsted, John H.; and Teller, Daniel M., 3,862,932.

American Hospital Supply Corporation: *See*—
Harautuneian, Andrew, 3,862,635.

American Safety Equipment Corporation: *See*—
Ulrich, Charles J.; and Tanaka, Akira, 3,862,726.

Ametek, Inc.: *See*—
Crabb, William A., 3,862,492.

Amidon, Charles Harold, Jr., to Gulf & Western Manufacturing Company. Apparatus for washing fabric. 3,862,554, Cl. 68-22.00R.

Amoco Production Company: *See*—
Briggs, Russell M.; and Iorwerth, Hesin ab, 3,863,201.
Landrum, Ralph A., Jr., 3,863,202.
Miller, James Willard, 3,863,200.

Amodio, Michael Peter: *See*—
Swindell, E. LeRoy; and Amodio, Michael Peter, 3,862,457.

AMP Incorporated: *See*—
Dorwart, Charles Edward, Jr.; Bierly, Meade Goodman; Fendrich, Charles Nelson, Jr.; and Roland, John Thomas, 3,863,194.

Anayama, Toshifumi: *See*—
Uebayashi, Yoshitaka; Tashiro, Koji; and Anayama, Toshifumi, 3,862,561.

Andersen, Rodney J.: *See*—
Crofut, Walter A.; Fletcher, Robert C.; Tarasevich, Andrew; and Andersen, Rodney J., 3,863,262.

Anderson, Charles H.: *See*—
Fieser, Arthur H.; Anderson, Charles H.; and Mobley, Loreley S., 3,862,749.

Anderson, Ronald W.; and McAfee, Richard C., to Mobil Oil Corporation. Water-based coatings from polyepoxides and polycarboxylic acid monoanhydrides. 3,862,914, Cl. 260-29.2EP.

Andersson, Einar Albin Valdemar. Hand tool for clean cutting of fit-up wallpapers, fitted carpets and the like. 3,862,494, Cl. 30-289.000.

Ando, Seigo: *See*—
Mori, Toshihiro; and Ando, Seigo, 3,863,141.

ANF Frangeco S.A.: *See*—
Pelabon, Andre E., 3,862,604.

Antoine, Jacques; and Mathieu, Jean-Jacques, to Institut de Recherches de la Siderurgie Francaise. Adjusting the temperature of a radiation furnace. 3,862,574, Cl. 73-343.00R.

Anzai, Makoto: *See*—
Kiyoto, Masami; and Anzai, Makoto, 3,863,253.

Arce, Luis A.: *See*—
O'Dea, Orrin B.; Arce, Luis A.; and Morrison, Ralph, 3,863,032.

Arens, Erich. Grating. 3,862,464, Cl. 15-217.000.

Argus Incorporated: *See*—
Carr, Maurice K., 3,862,800.

Armbrust, Herbert: *See*—
Ruechardt, Christoph; Hassmann, Volker; Quadbeck-Seeger, Hans-Juergen; and Armbrust, Herbert, 3,862,958.

Armour, Frank K.; and Prince, Peter, to Interlake, Inc. System for preventing effluent emissions from coke ovens. 3,862,888, Cl. 202-263.000.

Arrington, James R.: *See*—
King, Karl Lewis; and Arrington, James R., 3,862,895.

Artemis, Annivas. Vessel Hulls. 3,862,612, Cl. 114-56.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Itagaki, Takuo, 3,863,263.

Ashcroft, Richard I.: *See*—
Johnson, John R.; and Ashcroft, Richard I., 3,862,724.

Atlantic Richfield Company: *See*—
Kern, Loyd R., 3,862,662.
Sheng, Ming N.; Zajacek, John G.; and Baker, Thomas N., III, 3,862,961.

Attaway, Julian J.; and Driggers, Randolph W., to Miscellaneous Manufacturing Corporation. Coping structure. 3,862,531, Cl. 52-300.000.

Atwood, Harold T. Mandrel for shaping bakery products. 3,862,818, Cl. 425-308.000.

Atwood, Leon Warner; Balasubramanian, Peruvemba Swaminatha; and Gillett, John Brian, to International Business Machines Corporation. Regulated Transformerless Power Supply. 3,863,135, Cl. 321-15.000.

Audenard, Bernard; Pigeon, Michel; and Stach, Claude, to Commissariat a L'Energie Atomique. High-speed demodulator for sine-wave signals. 3,863,162, Cl. 328-151.000.

Aurora Metal Corporation: *See*—
Weiler, Donald J.; Fritz, John H.; and Lewis, B. Frank, 3,862,656.

Austin, Roger Tilston, to Down Bros.; and Mayer & Phelps Limited. Surgical implants. 3,862,631. Cl. 128-92.00B.

Auto Specialties Manufacturing Company: *See*—
Graafsma, Richard S.; and Morgan, George H., 3,862,577.
Graafsma, Richard S.; Nehrig, R. Harlan; and White, Nicholas J., 3,862,743.

Avco Corporation: *See*—
Cook, Charles W., 3,863,031.

Ayers, Weston D.; and Hirsch, Joseph G., to General Dynamics Corporation. Poling process for linear piezoelectric strain transducers. 3,862,477, Cl. 29-25.350.

Azuma, Kimikazu. Method of Manufacturing Foamed Plastic Tubular Nets and Apparatus Pertinent Thereto. 3,862,878, Cl. 161-58.000.

B. F. Goodrich Company, The: *See—*
Csontos, Alan A., 3,862,975.
Gilles, Jack C., 3,862,942.

Baader, Joseph E. Varied control vehicle light warning system. 3,863,213, Cl. 340-74.000.

Babcock & Wilcox Company, The: *See—*
Jabsen, Felix S., 3,862,884.

Babiec, John S., Jr., to Olin Corporation. Purification of 2,4,4,4-tetrachlorobutanol. 3,862,992, Cl. 260-633.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Distler, Harry; Widder, Rudi; and Pommer, Ernst-Heinrich, 3,862,966.
Eilingsfeld, Heinz; and Schwantje, Gerd, 3,862,944.
Fried, Michael; Moeller, Rolf; Zuern, Ludwig; and Stahnecker, Erhard, 3,862,915.
Junge, Helmut; and Quadbeck-Seeger, Hans-Juergen, 3,862,977.
Ruechardt, Christoph; Hassmann, Volker; Quadbeck-Seeger, Hans-Juergen; and Armbrust, Herbert, 3,862,958.

Baermann, Max. Permanent magnet sealing and closure member. 3,862,515, Cl. 49-478.000.

Bahr, Norman G. Clutch disengaging and bypassing assembly. 3,862,677, Cl. 192-48.400.

Bahrle, Willy; and Weigle, Dieter, to Firm of Constantin Rauch, The. Method of operating an axial piston machine having a hydrostatic bearing load relief device. 3,862,588, Cl. 91-486.000.

Baker, Graham: *See—*
Peppler, William S.; Keen, Everett M.; Siciliano, Anthony J.; and Baker, Graham, 3,862,621.

Baker, John W.: *See—*
Horowitz, Irving; and Baker, John W., 3,863,222.

Baker Perkins, Inc.: *See—*
Loomans, Bernard A., 3,862,551.

Baker, Theodore C.: *See—*
Schmersal, Larry J.; Baker, Theodore C.; and Murley, Ellsworth M., 3,863,023.

Baker, Thomas N., III: *See—*
Sheng, Ming N.; Zajacek, John G.; and Baker, Thomas N., III, 3,862,961.

Balamuth, Lewis, to Ultrasonic Systems, Inc. Ultrasonic surgical methods. 3,862,630, Cl. 128-024.00A.

Balasubramanian, Peruvemba Swaminatha: *See—*
Atwood, Leon Warner; Balasubramanian, Peruvemba Swaminatha; and Gillett, John Brian, 3,863,135.

Balban, Morton S., to Eaton Corporation. Vehicle safety system control circuit having a malfunction indicator. 3,863,208, Cl. 340-52.00H.

Ball Brothers Research Corporation: *See—*
Pardee, Robert P.; Bickling, Archie L., Jr.; and Loran, Thomas J., 3,862,860.

Balle, Walter: *See—*
Held, Gerhard; and Balle, Walter, 3,862,871.

Barker, Maynard C. Conveying arrangement for containers. 3,862,681, Cl. 198-50.000.

Barrett, Harry G.: *See—*
Bechman, William H.; and Barrett, Harry G., 3,862,769.

Barron, Benny G.; and Dunlap, James R., to Dow Chemical Company, The. Articles coated with air frothed polyurethane foams. 3,862,879, Cl. 161-159.000.

Bartizan Corporation: *See—*
Hawthorne, Nathaniel F., 3,862,598.

Bauer, Paul, Jr., to Owens-Illinois, Inc. Apparatus and method for controlling a centrifugal compressor. 3,863,110, Cl. 317-13.00A.

Bayer Aktiengesellschaft: *See—*
Dietrich, Werner; Wagner, Kuno; Roegler, Manfred; Kleimann, Helmut; and Richert, Karl Hartwig, 3,862,973.
Hohmann, Walter; Vollmann, Heinrich; Bien, Hans-Samuel; and Gehrke, Gunter, 3,862,967.
Hombach, Rudolf; and Theisen, Dieter, 3,862,917.
Koehler, Michael; Elghani, Salah Elabd; and Prinz, Richard, 3,862,998.

Bayley, Donald S.: *See—*
Simpson, James H.; Bayley, Donald S.; and Greenwood, Ivan A., 3,863,144.

Beard, William Q., Jr., to Ethyl Corporation. Ethylene from halogenated hydrocarbons. 3,862,996, Cl. 260-677.0XA.

Bechman, William H.; and Barrett, Harry G., to Eaton Corporation. Pivot construction. 3,862,769, Cl. 280-400.000.

Bedell, John R., to Allied Chemical Corporation. Extended retention of melt spun ribbon on quenching wheel. 3,862,658, Cl. 164-87.000.

Bell, David; and Hagan, William K., to Health Technology Labs, Inc. Computer controlled defibrillator. 3,862,636, Cl. 128-419.00D.

Bell-Northern Research Ltd.: *See—*
Mc Crudden, John Anthony, 3,863,036.

Bell Telephone Laboratories, Incorporated: *See—*
Beurrier, Henry Richard, 3,863,168.
Damen, Theodore Charlouis; Tofield, Bruce Cedric; and Weber, Heinz Paul, 3,863,177.
Glance, Bernard; and Schneider, Martin Victor, 3,863,181.
Indig, George Sanford; and Rentzepis, Peter Michael, 3,863,063.

Belohoubek, Erwin F., to United States of America, Navy. M-type microwave signal delay tube. 3,863,100, Cl. 315-39.300.

Bendix Corporation, The: *See—*
Bienkowski, Joseph V., 3,863,077.
Blatter, Albert; Kasselmann, John T.; and Hickner, George B., 3,862,675.
Harvey, Bruce J., 3,862,540.
Morris, Charles W., 3,862,783.
Owens, Abner, Jr., 3,863,099.
Ratcliff, Henry Kevin, 3,863,170.

Benfield Corporation, The: *See—*
Field, Joseph H.; and McCrea, Donald H., 3,863,003.

Benson, Gustav E., to Owens-Corning Fiberglas Corporation. Method of coating yarn. 3,862,853, Cl. 117-111.00R.

Benson, James C., to General Motors Corporation. Shock absorbing attachment unit for a vehicle restraint belt. 3,862,673, Cl. 188-1.00C.

Bentson Industries, Inc.: *See—*
Latham, Ernest W., 3,862,772.

Beres, Steven W.; and Carrion, Carmelo, Jr., to RCA Corporation. Hand-held dispenser with mixing valve and pressurizing valve. 3,862,705, Cl. 222-94.000.

Beres, Steven W.: *See—*
Steiman, Wolf; and Beres, Steven W., 3,862,741.

Berg Manufacturing Company, The: *See—*
Horowitz, Charles F.; and Klimek, Boleslaw, 3,862,782.

Berger, Leo; and Corraz, Alfred John, to Hoffmann-La Roche Inc. Cycloalkene(B)indoles. 3,862,953, Cl. 260-295.00T.

Bergmann, Gerhard, to Karl Mayer Textilmaschinenfabrik GmbH. Weft arrangement for wrap knitting machines. 3,862,552, Cl. 66-84.00A.

Bergstrom, Lars Rune; and Ridder, Georg Sven-Olof. Rigging system for sailboat. 3,862,613, Cl. 114-102.000.

Berkenblit, Melvin; Lussow, Robert O.; and Reisman, Arnold, to International Business Machines Corporation. Glass fabrication process. 3,862,831, Cl. 65-60.000.

Bernaerts, Henry J., to United States of America, Navy. Streamlined x-y-z cone valve. 3,862,811, Cl. 416-20.000.

Berndt, Heinz; Simic, Dragomir; and Zupancic, Heinz-Ulrich, to Deutsche Texaco Aktiengesellschaft. Process for producing medium-to coarse-cell rigid phenolic resin foams of improved abrasion wear. 3,862,912, Cl. 260-2.50F.

Bernhard, Robert W.; and Rork, Glen A. Animal cage with lock device. 3,862,620, Cl. 119-17.000.

Berry, Allan E.: *See—*
Kang, George S.; and Berry, Allan E., 3,863,257.

Betzing, Hans; and Lekim, Dac, to Nattermann, A. & Cie GmbH. Process of methylating cephalins. 3,862,968, Cl. 260-403.000.

Beurrier, Henry Richard, to Bell Telephone Laboratories, Incorporated. Amplifiers with parallel-connected amplifying stages. 3,863,168, Cl. 330-18.000.

Bianchetta, Donald L.; and Lohbauer, Kenneth R., to Caterpillar Tractor Company. Pilot control valve. 3,862,645, Cl. 137-625.690.

Bickling, Archie L., Jr.: *See—*
Pardee, Robert P.; Bickling, Archie L., Jr.; and Loran, Thomas J., 3,862,860.

Bielski, Edward T.; Lackey, Daryl L.; and Theiss, Russell V., to Monsanto Enviro-Chem Systems, Inc. Method for processing heat-decomposable non-gaseous materials. 3,862,887, Cl. 201-2.500.

Bien, Hans-Samuel: *See—*
Hohmann, Walter; Vollmann, Heinrich; Bien, Hans-Samuel; and Gehrke, Gunter, 3,862,967.

Bienkowski, Joseph V., to Bendix Corporation, The. Starter lock-out circuit. 3,863,077, Cl. 290-38.000.

Bierly, Meade Goodman: *See—*
Dorwart, Charles Edward, Jr.; Bierly, Meade Goodman; Fendrich, Charles Nelson, Jr.; and Roland, John Thomas, 3,863,194.

Billam, Roy: *See—*
Ironmonger, Edward Albert; and Billam, Roy, 3,863,075.

Bisbing, Robert H., to Southco, Inc. Push-release fastener. 3,862,773, Cl. 292-70.000.

Bissonette, Vernon Leon, to Eastman Kodak Company. Image-forming processes and compositions. 3,862,842, Cl. 96-22.000.

Bivona, Leonard P.; Nunnink, Leonard I., Jr.; and Seek, Robert L. Pipe cutting machine. 3,862,710, Cl. 225-103.000.

Black, Robert; and Hall, Christopher, to Burroughs Corporation. Automatic cash dispenser and system and method therefor. 3,862,716, Cl. 235-61.70B.

Blanco, Louis A.: *See—*
Wenning, William F., Jr.; and Blanco, Louis A., 3,862,844.

Blase, Robert. Machine press with positive cam driven sliding bed and cam activated auxiliary systems. 3,862,564, Cl. 72-405.000.

Blatter, Albert; Kasselmann, John T.; and Hickner, George B., to Bendix Corporation, The. Fluid injection antiskid brake system. 3,862,675, Cl. 188-181.00R.

Bleiberg, Shirley R., executrix: *See—*
Ringelheim, Harry M., deceased; Bleiberg, Shirley R., executrix; and Jason, John J., 3,862,504.

Blize, Roy L.: *See—*
Speirs, Kenneth K.; Weinstein, Martin; and Blize, Roy L., 3,862,851.

Bloch, Moshe Rudolf: *See—*
Zeigerson, Esther; and Bloch, Moshe Rudolf, 3,862,854.

Blose, Werner, to Schlegel GmbH. Devices to manufacture large webs or sheets of synthetic foil material from extruded strips joined together along their edges. 3,862,873, Cl. 156-500.000.

Blythe, Anthony Reginald; and Reddish, Wilson, to Imperial Chemical Industries Limited. Electrostatic charge controller. 3,863,108, Cl. 317-2.00R.

Boadway, John D., to Queen's University at Kingston. Vortex clarifier. 3,862,714, Cl. 233-3.000.

Bodanszky, Miklos: *See*—
Said, Sami I.; Bodanszky, Miklos; Mutt, Viktor; and Klausner, Yakir, 3,862,927.

Bodner, Norbert. Fastener assembly. 3,862,809, Cl. 403-407.000.

Boehmer, Brian E.: *See*—
Norton, Henry J.; and Boehmer, Brian E., 3,862,472.

Boehringer Mannheim G.m.b.H.: *See*—
Kaiser, Fritz; Lubs, Hans Joachim; Schaumann, Wolfgang; and Voigtlander, Wolfgang, 3,862,931.

Boemer, Curt Carl. Automatic locking of high-level luminaires. 3,862,744, Cl. 254-148.000.

Bogdanovich, Andrew Carlyle. Tandem runner bob sled. 3,862,766, Cl. 280-16.000.

Bogert, Warren D., to International Telephone and Telegraph Corporation. Frequency lock loop employing a gated frequency difference detector. 3,863,156, Cl. 325-346.000.

Bohner, Beat: *See*—
Dawes, Dag; and Bohner, Beat, 3,862,957.

Bohner, William R.: *See*—
Miller, Roy H.; Boyer, Charles J.; and Bohner, William R., 3,862,451.

Bolhuis, Pieter Jan, to U.S. Philips Corporation. Arrangement for the controllable supply of at least two groups of electric lamps. 3,863,104, Cl. 315-154.000.

Bonikowski, Zbigniew, to British Insulated Callender's Cables Limited. Winding apparatus for elongated flexible material. 3,862,723, Cl. 242-45.000.

Booker, Robert W. Warning system for indicating automobile head lights are on. 3,863,101, Cl. 315-82.000.

Booth, David L., to Morton-Norwich Products, Inc. Isocyanophenyl carbamates. 3,862,976, Cl. 260-465.00D.

Borello, Margaret M.: *See*—
Sims, Ernest G.; and Borello, Margaret M., 3,862,776.

Borgstrom, Klas Ingvar Helmer: *See*—
Granseus, Folke Evert; and Borgstrom, Klas Ingvar Helmer, 3,862,816.

Bors, Hans: *See*—
Schwemmer, Martin; Bors, Hans; and Goetz, Albert, 3,862,553.

Bostic, Michael E., to Xerox Corporation. Apparatus for recording the occurrence of a predetermined operation by sensing the magnetic field of the operation. 3,863,143, Cl. 324-43.00R.

Boughnou, Thomas R.; Buss, Kenneth G.; and Frey, Charles E., to United States of America, Navy. Hybrid phase/amplitude monopulse direction-finding receiver. 3,863,259, Cl. 343-113.00R.

Bouligny Company, The: *See*—
Pierce, John H., 3,862,722.

Bowen, Jack L., to E. F. Johnson Company. Sliding variable resistor. 3,863,195, Cl. 338-183.000.

Bowers, George L.: *See*—
Harmon, Kenneth B.; Bowers, George L.; and Livezey, William G., 3,862,585.

Boyd, Donald R., to Allis-Chalmers Corporation. Operating device for switches or the like. 3,863,043, Cl. 200-153.00R.

Boyd, Harold B.; and Lambrix, James R., to Pullman Incorporated. Process for the production of olefinically unsaturated hydrocarbons. 3,862,898, Cl. 208-73.000.

Boyer, Charles J.: *See*—
Miller, Roy H.; Boyer, Charles J.; and Bohner, William R., 3,862,451.

BP Chemicals Limited: *See*—
Sturt, Alan Charles, 3,862,913

Braddock, William A.: *See*—
Gudmundsen, Richard L., 3,862,775.

Brady, Robert C. Dispensing unit for moistening material. 3,862,616, Cl. 118-6.000.

Brady, Thomas P., to Dow Chemical Company, The. 3-(3-Chloro-2-propenyl)-1,3,5,7-tetraazabicyclo(3.3.1) nonane-3-methanol and its preparation. 3,862,939, Cl. 260-248.0NS.

Brady, Thomas P.: *See*—
Mitchell, Albertha B.; Moppett, Charles E.; and Brady, Thomas P., 3,862,940.

Brandmayr, Ronald J.; and DiVita, Sam, to United States of America, Army. Method of processing ferroelectric devitrifiable glass ceramics. 3,862,829, Cl. 65-32.000.

Braun, Ann B.: *See*—
Fitch, Frederick T.; and Braun, Ann B., 3,862,908.

Breiner, Frank S.: *See*—
Drenten, Bruce J.; and Breiner, Frank S., 3,862,506.

Breuer, Herman; and Treuner, Uwe, to E. R. Squibb & Sons, Inc. 2-(Thiocarbonylamino)acetamidocephalosporanic acid compounds. 3,862,941, Cl. 260-243.00C.

Brezosky, Bernard J., to General Electric Company. Washer installation. 3,862,786, Cl. 312-228.000.

Briggs, Russell M.; and Iorwerth, Hesin ab, to Amoco Production Company. Seismometer arrays using operational amplifiers. 3,863,201, Cl. 340-15.5GC.

British Insulated Callender's Cables Limited: *See*—
Bonikowski, Zbigniew, 3,862,723.

Brocklehurst, Charles E., to Riegel Textile Corporation. Apparatus for cutting and finishing segments of a traveling web. 3,862,610, Cl. 112-121.110.

Broom, Gilbert R., to Inland Steel Company. Tophole opening apparatus. 3,862,750, Cl. 266-42.000.

Broscoff, Mary E.; and Tackett, Edd. Pin vise. 3,862,516, Cl. 51-217.00P.

Brown, Gordon: *See*—
Gillibrand, Maurice Ivan; and Brown, Gordon, 3,862,862.

Brown, William E., to Fritz & Associates, a division of Ozaukee Airways, Ltd. Apparatus for erasing magnetic ink. 3,862,806, Cl. 401-118.000.

Bruch, Walter, to TED Bildplatten Aktiengesellschaft, AEG-Telefunken, TELDEC. Television signal clocked delay line for delay by an integer number of horizontal scanning lines driven by a pilot signal. 3,863,022, Cl. 358-8.000.

Brugger, Antoinette M.: *See*—
Brugger, Max T.; and Brugger, Antoinette M., 3,863,050.

Brugger, Max T.; and Brugger, Antoinette M. Automatic credit card validating device. 3,863,050, Cl. 235-61.70B.

Brulington Industries, Inc.: *See*—
Illman, Walter F.; Malpass, Robert C.; and Conklin, Delano M., 3,862,475.

Brunette, Fred F. Scrubber and massager apparatus. 3,862,459, Cl. 15-21.00D.

Buchin, Karl; and Scheunemann, Horst, to H. Berthold A.G. Instrument head mounting. 3,862,734, Cl. 248-125.000.

Buckeye Cellulose Corporation, The: *See*—
Camden, James Berger, 3,862,877.

Buckley, Morton C. Electric resistance heater cooker for a food package. 3,863,048, Cl. 219-383.000.

Bucklitzsch, Hans H. Brush for cleaning bottle. 3,862,461, Cl. 15-164.000.

Bunnelle, Philip R., to FMC Corporation. Variable fill fluid coupling. 3,862,541, Cl. 60-358.000.

Burgoon, Jack L., to Scott & Fetzer Company, The. Vacuum cleaner. 3,862,469, Cl. 15-357.000.

Burkart, Werner. Support for collapsible tubes. 3,862,706, Cl. 222-105.000.

Burkoth, Terry: *See*—
Gottwald, Ken; Burkoth, Terry; and Ullman, Edwin F., 3,862,951.

Burroughs Corporation: *See*—
Black, Robert; and Hall, Christopher, 3,862,716.
Harvey, Edgar L.; and Hardwick, Albert J., 3,863,088.
Holz, George E., 3,863,087.

Burst, John F.: *See*—
Smoak, Richard H.; Staut, Ronald; and Burst, John F., 3,862,846.

Bush, Jerome J., to Sealed Power Corporation. Trimmer device for rotary engine side seals. 3,862,518, Cl. 51-99.000.

Bushev, Alexandr Vasilievich: *See*—
Grinshpun, Mark Izrailevich; Dobkin, Igor Iosifovich; Kurenkov, Gennady Fedorovich; and Bushev, Alexandr Vasilievich, 3,862,560.

Buss, Kenneth G.: *See*—
Boughnou, Thomas R.; Buss, Kenneth G.; and Frey, Charles E., 3,863,259.

Butler, Gene R., to Sperry Rand Corporation. Mechanical first table drive assembly for a bale wagon. 3,862,692, Cl. 214-6.00B.

Butler, Henry N. Power ventilator. 3,862,718, Cl. 236-49.000.

Byrum, Bernard W., Jr.: *See*—
Ernsthausen, Roger E.; and Byrum, Bernard W., Jr., 3,863,089.

Byssing, George J. Clip for non progressive wall construction. 3,862,535, Cl. 52-753.00W.

C. Terrot Soehne: *See*—
Glaunsinger, Heinz; and Engelfried, Werner, 3,863,260.

Cacciatore, Anthony D.; and Cacciatore, Joseph J., to Ciccarello, Joseph, a part interest. Movable meathook. 3,862,605, Cl. 105-151.000.

Cacciatore, Joseph J.: *See*—
Cacciatore, Anthony D.; and Cacciatore, Joseph J., 3,862,605.

Calabrese, Ronald V., to Lumenite Electronic Company. Automatic sequence control apparatus. 3,863,079, Cl. 307-41.000.

Cale, Albert Duncan, Jr.: *See*—
Lunsford, Carl Dalton; and Cale, Albert Duncan, Jr., 3,862,938.

Callahan, James J.; and Snow, John Procter, to McNeil Corporation. Lubricating apparatus. 3,862,544, Cl. 60-546.000.

Camden, James Berger, to Buckeye Cellulose Corporation, The. Cloth-like tissue laminates. 3,862,877, Cl. 161-57.000.

Cameron, James H.: *See*—
Tygard, Charles M.; and Cameron, James H., 3,863,039.

Campanella, Angelo J., to Infra Systems, Inc. Infrared measuring system with channel spectra negation. 3,863,071, Cl. 250-339.000.

Campman, James P. Apparatus for detecting motion in a given field of view, for sounding an alarm when said motion exceeds a predetermined extent. 3,863,239, Cl. 340-258.00R.

Cantor, Stephen E., to Uniroyal, Inc. Metal-rubber adhesion system. 3,862,883, Cl. 161-215.000.

Caragliano, Edward S.; and Nick, Howard H., to International Business Machines Corporation. Directional coupled data transmission system. 3,863,024, Cl. 178-68.000.

Carlo Erba S.p.A.: *See*—
Gandolfi, Carmelo; Doria, Gianfederico; and Gaio, Pietro, 3,862,979.

Carmet Company: *See*—
Phillips, William H., Jr., 3,862,566.

Caron, Joseph Adalbert. Key holder with flashlight. 3,863,062, Cl. 240-6.40K.

Carr, Maurice K., to Argus Incorporated. Slide transparency cassette. 3,862,800, Cl. 353-113.000.

Carrion, Carmelo, Jr.: *See—*
Beres, Steven W.; and Carrion, Carmelo, Jr., 3,862,705.
Casper, Clarence, Jr.: *See—*
Kupersmith, Bertram F.; and Casper, Clarence, Jr., 3,863,158.
Catanzarite, Vincent O.: *See—*
Timmerman, Hubert G.; and Catanzarite, Vincent O., 3,862,866.
Caterpillar Tractor Company: *See—*
Bianchetta, Donald L.; and Lohbauer, Kenneth R., 3,862,645.
Dezelan, Joseph E.; and Jessen, Henry J., 3,862,643.
Gill, Stephen H.; Knell, Harvey A.; and Tucker, Joseph M., III, 3,862,697.
Cebuliak, Steve E.; Leach, Clifford Harvey; and Westlake, John Henry, to Gentrix Engineering Ltd. Electrical current flow indicator. 3,863,150, Cl. 324-133.000.
Ceramic Color & Chemical Manufacturing Co.: *See—*
Wenning, William F., Jr.; and Blanco, Louis A., 3,862,844.
Ceramic Systems: *See—*
Trueblood, Richard Kent, 3,862,850.
Ceskoslovenska akademie ved: *See—*
Wichterle, Otto; Kliment, Karel; Vacik, Jiri; Ott, Zdenek; Stol, Miroslav; and Dvorak, Jan, 3,862,452.
Chabert, Henri, to Rhone-Poulenc S.A. Catalyst based on raney nickel containing iron. 3,862,911, Cl. 252-470.000.
Chambon, Maurice; and Neel, Jean, to Progil. Composition for cleaning hands and other parts of the body. 3,862,906, Cl. 252-117.000.
Champion International Corporation: *See—*
Cottrell, Edward D., 3,862,591.
Chance, Philip G.: *See—*
Mahieu, William R.; Tackaberry, Robert S.; and Chance, Philip G., 3,863,187.
Chaplin, Merle P. Mechanical elimination of aquatic growths. 3,862,537, Cl. 56-9.000.
Chapman, Arthur William. Means for indicating completion of sterilisation processes. 3,862,824, Cl. 23-253.0TP.
Chas. Taylor's Sons Company, The: *See—*
Manigault, Edward L., 3,862,845.
Chase-Shawmut Company, The: *See—*
Knapp, Edward J., Jr., 3,863,188.
Salzer, Erwin, 3,863,191.
Cheavens, Thomas Henry; and Robert, Stewart, to W. R. Grace & Co. Process for the oxidation of orthoxylene or naphthalene to phthalic anhydride. 3,862,960, Cl. 260-346.400.
Chemische Werke Huels Aktiengesellschaft: *See—*
Von Praun, Ferdinand; and Kosswig, Kurt, 3,862,983.
Chen, Chungmin; Kelly, Michael J.; and Rekiere, Bernard J., to GTE Automatic Electric Laboratories Incorporated. Step-by-step telephone central exchanges for use with pcm communication networks. 3,863,033, Cl. 179-18.0FC.
Chernonogov, Vladimir Sergeevich: *See—*
Kovalenko, Leonid Maximovich; Tovazhnyansky, Leonid Leonidovich; Pertsev, Leonid Petrovich; Korobchansky, Ostap Alexandrovich; Chernonogov, Vladimir Sergeevich; and Sytnik, Vladimir Ilich, deceased, 3,862,661.
Chernyavsky, Vladimir Pavlovich: *See—*
Shapiro, Aron Beniaminovich; Chernyavsky, Vladimir Pavlovich; and Kadi-Ogly, Ibragim Akhmedovich, 3,863,085.
Chevron Research Company: *See—*
Ellis, John R. B.; and Pryor, Arthur W., 3,862,545.
Chicago Bridge & Iron Company: *See—*
Strunc, Robert Winfield; and Doty, Robert Kenneth, 3,862,701.
Chicago Roller Skate Company: *See—*
Ware, Gordon K., 3,862,763.
Chivinsky, Joseph A., to Allegheny Ludlum Industries, Inc. Production of composite material. 3,862,484, Cl. 29-472.300.
Chiz, Donald A., to GTE Automatic Electric Laboratories Incorporated. Anode basket vibrator. 3,862,745, Cl. 259-1.00R.
Chollet, Pierre: *See—*
Gervais, Edouard; and Chollet, Pierre, 3,862,863.
Christenson, Roger M.: *See—*
McGuire, Kathleen A.; Hansen, Charles M.; and Christenson, Roger M., 3,862,894.
Chromalloy American Corporation, The: *See—*
Speirs, Kenneth K.; Weinstein, Martin; and Blize, Roy L., 3,862,851.
Chun-Chih, Hsian. Automobile over speed prevention device. 3,863,205, Cl. 340-32.000.
Chute, Richard, to Eaton Corporation. Vehicle safety apparatus having expandable confinement. 3,862,767, Cl. 280-150.0AB.
Ciba-Geigy Corporation: *See—*
Dawes, Dag; and Bohner, Beat, 3,862,957.
Ciccarello, Joseph: *See—*
Cacciatore, Anthony D.; and Cacciatore, Joseph J., 3,862,605.
Cichowski, Robert S., to Phillips Petroleum Company. Oxidative dehydrogenation catalyst and process of preparation thereof. 3,862,910, Cl. 252-435.000.
Clardy, Lewis L. Wall mounted selectively controlled alarm. 3,863,236, Cl. 340-326.000.
Clark, William H., to Litton Systems, Inc. Binary beam system. 3,863,258, Cl. 343-113.00R.
Cochran, David S.: *See—*
Rode, France; Crowley, William L., Jr.; Walker, Alexander D. R.; and Cochran, David S., 3,863,060.
Cohen, Elliott: *See—*
Lang, Stanley Albert, Jr.; Cohen, Elliott; and Sloboda, Adolph Edward, 3,863,010.
Cohen, Maurice. Display rack having a molded hanger assembly body and hanger supports. 3,862,690, Cl. 211-165.000.
Cohen, Maurice. Rotatable display rack having vertical adjustment therefor. 3,862,735, Cl. 248-405.000.
Cole, James W.: *See—*
Kentro, Dan M.; and Cole, James W., 3,862,836.
Coletti, Hugo. Method of constructing a dwelling. 3,862,534, Cl. 52-745.000.
Colin, Jean-Marie Henri, to International Standard Electric Corporation. Doppler scanning guidance system receiver with fourier transform computer. 3,863,055, Cl. 235-150.270.
Collette, Richard L.; Vojir, Frank S.; and Watts, Roger E., to Guardian Electric Manufacturing Company. Mechanical counter. 3,863,052, Cl. 235-91.00R.
Collins, Marcus Howard, to Eaton Corporation. Cooled coupling with disc stops. 3,862,678, Cl. 192-88.00A
Collins Radio Company: *See—*
Trcka, James S.; and Yeoman, David C., 3,863,246.
Colt Industries, Operating Corporation: *See—*
Olsen, Charles R., 3,862,599.
Colyn, Roland, to Compagnie Generale D'Electricite. Device for charging at a predetermined voltage, an element for storing electrical power. 3,863,126, Cl. 320-1.000.
Commercial Solvents Corporation: *See—*
Urry, Wilbert Herbert; and Mullenbach, Guy Towns, 3,862,980.
Commissariat a L'Energie Atomique: *See—*
Audenard, Bernard; Pigeon, Michel; and Stach, Claude, 3,863,162.
Garin, Arlette; and Waast, Bernard, 3,863,072.
Communication Mfg. Co.: *See—*
Morrison, Ralph, 3,863,034.
O'Dea, Orrin B.; Arce, Luis A.; and Morrison, Ralph, 3,863,032.
Compagnie Generale D'Electricite: *See—*
Colyn, Roland, 3,863,126.
Companie Francaise de Raffinage: *See—*
Weisang, Joseph-Edouard; Szabo, Georges; and Maurin, Jean, 3,862,964.
Concast AG: *See—*
Thalmann, Armin, 3,862,657.
Coniglio, James John; and Wiley, Robert Emerson, to Acheson Industries, Inc. New capacitor construction. 3,863,116, Cl. 317-230.000.
Conklin, Delano M.: *See—*
Illman, Walter F.; Malpass, Robert C.; and Conklin, Delano M., 3,862,475.
Conley, Dwain D. Talking tape measure. 3,862,761, Cl. 274-1.00A.
Connors, Robert H.: *See—*
Muskat, Robert L.; Connors, Robert H.; Klopfenstein, King L.; and Stachnik, Michael S., 3,862,666.
Constructions Navales et Industrielles de la Mediterranee C.N.I.M.: *See—*
Schmidt, Hermann Karl; and Tauzin, Jean Michel, 3,862,584.
Continental Gummi-Werke Aktiengesellschaft: *See—*
Richter, Heinz; Kase, Walter; Kolle, Hans-Hermann; and Rothen, Johann, 3,862,559.
Continental Oil Company: *See—*
Pace, Gerald F.; and Shortridge, Earl W., 3,863,002.
Yates, James E.; and Motz, Kaye L., 3,862,993.
Yates, James E., 3,862,994.
Cook, Charles W., to Avco Corporation. Signal regenerator. 3,863,031, Cl. 179-15.0BM.
Cooley, William H.: *See—*
Allison, Kenneth C.; and Cooley, William H., 3,862,633.
Copal Company Limited: *See—*
Hasebe, Sukehiro, 3,863,084.
Copeland, George G., to Copeland Systems Incorporated. Fluidized bed autogenous combustion and pyrolysis of aqueous effluents to prepare activated carbon. 3,862,909, Cl. 252-421.000.
Copeland Systems Incorporated: *See—*
Copeland, George G., 3,862,909.
Corbin, Alan, to American Home Products Corporation. Process for treating neuroendocrinopathic diseases employing pimozide. 3,863,011, Cl. 424-267.000.
Cornell, Thomas V., to General Motors Corporation. Multipath reception simulator. 3,863,155, Cl. 325-67.000.
Corraz, Alfred John: *See—*
Berger, Leo; and Corraz, Alfred John, 3,862,953.
Corwin, John Roy: *See—*
Tappen, Harold B.; and Corwin, John Roy, 3,862,672.
Cory, Thornton E. Arrangement for inhibiting rotation of wheel rims on spoked truck wheel. 3,862,778, Cl. 301-10.0DC.
Cotta Ramusino, Francesco: *See—*
Galbarini, Maso; and Cotta Ramusino, Francesco, 3,862,586.
Cottrell, Edward D., to Champion International Corporation. Method and apparatus for forming hollow paper sticks. 3,862,591, Cl. 93-94.00R.
Coulter Electronics, Inc.: *See—*
Coulter, Wallace H.; and Doty, Edward Neal, 3,863,159.
Klein, Robert Ivan, 3,863,056.
Liedholz, Gerhard A., 3,863,066.
Coulter, Wallace H.; and Doty, Edward Neal, to Coulter Electronics, Inc. Particle analyzing method and apparatus having pulse amplitude modification for particle volume linearization. 3,863,159, Cl. 328-117.000.
Cowher, Melvyn E.; and Sedgwick, Thomas O., to International Business Machines Corporation. Method of making field effect layers. 3,862,858, Cl. 117-215.000.

Crabb, William A., to Ametek, Inc. Method for production of stator lead anchoring and splice-insulating slot insulator structure. 3,862,492, Cl. 29-596.000.
Craig, William A., II. Tethered ball. 3,862,757, Cl. 273-58.00C.
Cressman, Paul J.: *See—*
Pilato, Louis A.; Cressman, Paul J.; and Limburg, William W., 3,862,841.
Cricchio, Renato; and Lancini, Giancarlo, to Gruppo Lepetit S.p.A. 3-Hydrazonomethyl rifamycins. 3,862,934, Cl. 260-239.30P.
Crofut, Walter A.; Fletcher, Robert C.; Tarasevich, Andrew; and Andersen, Rodney J., to Datalight, Inc. Laser phototypesetter. 3,863,262, Cl. 354-5.000.
Crosby, Philip Stephen: *See—*
Nelson, Larry A.; and Crosby, Philip Stephen, 3,863,264.
Crowley, William L., Jr.: *See—*
Rode, France; Crowley, William L., Jr.; Walker, Alexander D. R.; and Cochran, David S., 3,863,060.
CRS Industries, Inc.: *See—*
Haupt, Hans O., 3,862,826.
Csontos, Alan A., to B. F. Goodrich Company, The. Process for preparing liquid xanthate-terminated polymers. 3,862,975, Cl. 260-455.00R.
Cunningham, Frank M.: *See—*
Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; Cunningham, Frank M.; and Danko, Oliver L., 3,862,740.
Curtice, Beverly A.; and Harnsberger, Bobby G., to Texaco Inc. Method for stabilizing incompetent oil-containing formations. 3,862,663, Cl. 166-276.000.
Curtis Instruments, Inc.: *See—*
Marwell, Edward M.; and Finger, Eugene P., 3,863,154.
Cutler-Hammer, Inc.: *See—*
Mallonen, Edward A., 3,863,186.
Dahlberg, Kurt Gunnar, to Thermo Trim, Inc. Molded latch opening. 3,862,817, Cl. 425-292.000.
Damen, Theodore Charlouis; Tofield, Bruce Cedric; and Weber, Heinz Paul, to Bell Telephone Laboratories, Incorporated. Metallic pentaphosphate glasses and uses therefor. 3,863,177, Cl. 331-94.50F.
Dana Corporation: *See—*
Schall, Myron M., 3,862,676.
Daniels, Alexander, to North American Philips Corporation. Vuillemier refrigerator. 3,862,546, Cl. 62-6.000.
Danko, Oliver L.: *See—*
Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; Cunningham, Frank M.; and Danko, Oliver L., 3,862,740.
Datalight, Inc.: *See—*
Crofut, Walter A.; Fletcher, Robert C.; Tarasevich, Andrew; and Andersen, Rodney J., 3,863,262.
Davies, Terrence Ardern; Garner, Geoffrey Michael; Hurditch, Rodney John; Lynch, James Thomas; Lanham, Tony Edward; and Fearnside, Kenneth, to Plessey Handel und Investments A.G. Electrical interconnectors and connector assemblies. 3,862,790, Cl. 339-17.0LM.
Davis, F. Darell. Miniature gold game. 3,862,760, Cl. 273-176.00E.
Dawes, Dag; and Bohner, Beat, to Ciba-Geigy Corporation. 1,2,4-Triazol-3-ol esters. 3,862,957, Cl. 260-308.00R.
Dearborn Rubber Corporation: *See—*
Herro, Richard E., 3,862,736.
Decker, Dalton L.; Moore, Carl; and Tousignant, William F., to Dow Chemical Company, The. Catalytic synthesis of organic halogen compounds from an ethylenically unsaturated compound and a halogenated organic compound. 3,862,978, Cl. 260-465.700.
Deere & Company: *See—*
Johnson, Earl Clinton, 3,862,652.
De Jager, Donald, to Eastman Kodak Company. Plastic-glass eyeloupe. 3,862,796, Cl. 350-216.000.
Dell Foods Limited: *See—*
Shires, Frank, 3,863,018.
Delmar Chemicals Limited: *See—*
Podesva, Ctirad; and Solomon, Carola, 3,862,987.
De Mayo, John F., to Sensonics, Inc. Tapping device for generating periodic mechanical pulses. 3,863,114, Cl. 317-123.000.
Demeter, Laszlo: *See—*
Farrell, Sherman R.; Demeter, Laszlo; and Woods, Peter Ghormley, 3,863,163.
Demoures, Bernard; Llauro, Daniel; and Giolito, Francois, to Rhone-Progil. New lubricating oil additives. 3,862,981, Cl. 260-479.00S.
Denzel, Theodor; and Hoehn, Hans, to E. R. Squibb & Sons, Inc. Intermediate for production of alkoxy derivatives of pyrazolopyridine carboxylic acids and esters. 3,862,947, Cl. 260-295.50R.
Derzhavets, Abram Yakovlevich; Kogan, Petr Grigorievich; and Nunuparov, Sergei Martynovich. Device for receiving water surface floating impurities. 3,862,902, Cl. 210-122.000.
Deschenes, Pierre A.; Stephenne, Hubert; and Villeret, Michel, to Universite de Sherbrooke. Digital compressor-expander. 3,863,248, Cl. 340-347.0DD.
Deutsche Texaco Aktiengesellschaft: *See—*
Berndt, Heinz; Simic, Dragomir; and Zupancic, Heinz-Ulrich, 3,862,912.
Devitt, John L.: *See—*
McClelland, Donald H.; and Devitt, John L., 3,862,861.
De Wied, David; and Greven, Hendrik Marie, to Akzona Incorporated. Psychopharmacological hexa-peptides containing a d-phenylalanyl residue. 3,862,928, Cl. 260-112.500.
Dezelan, Joseph E.; and Jessen, Henry J., to Caterpillar Tractor Company. Pilot pump bleed control for earthmoving scrapers. 3,862,643, Cl. 137-625.630.
Diamond International Corporation: *See—*
Peppler, William S.; Keen, Everett M.; Siciliano, Anthony J.; and Baker, Graham, 3,862,621.
Dickey, Helen M.: *See—*
Hopper, Joan M.; and Dickey, Helen M., 3,862,874.
Didkova, Juna: *See—*
Kramenic, Zdenek; Zabrodsky, Zdenek; Didkova, Juna; Kralove, Hradec; and Imramovsky, Rudolf, 3,862,649.
DIEHL: *See—*
Rentzsch, Max; and Hofmann, Gunther, 3,862,601.
Dietrich, Werner; Wagner, Kuno; Roegler, Manfred; Kleimann, Helmut; and Richert, Karl Hartwig, to Bayer Aktiengesellschaft. Process for the preparation of polyisocyanates containing biuret groups. 3,862,973, Cl. 260-453.0AB.
Digital Data Systems, Inc.: *See—*
Siems, Lee E., 3,863,057.
Dildy, Clell A., Jr., to United States of America, Navy. Helium speech decoder. 3,863,026, Cl. 179-1.0SH.
Distler, Harry; Widder, Rudi; and Pommer, Ernst-Heinrich, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. 2,2-Dimethyl furan-3-carboxylic acid cyclohexylamide. 3,862,966, Cl. 260-347.300.
DiVita, Sam: *See—*
Brandmayr, Ronald J.; and DiVita, Sam, 3,862,829.
Dobkin, Igor Iosifovich: *See—*
Grinshpun, Mark Izrailevich; Dobkin, Igor Iosifovich; Kurenkov, Gennady Fedorovich; and Bushev, Alexandr Vasilievich, 3,862,560.
Dr. Hans Boekels & Co.: *See—*
Wernitz, Peter, 3,863,152.
Doden, Hans-Jurgen; and Ulderup, Jurgen, to Lemforder Metallwasen AG. Disengageable universal joint construction. 3,862,807, Cl. 403-135.000.
Doerr, Norman N. Lake raking apparatus. 3,863,237, Cl. 15-1.700.
Doherty, Cecilia Rosalie. Article projecting device for toy balloon. 3,862,626, Cl. 124-17.000.
Doria, Gianfederico: *See—*
Gandolfi, Carmelo; Doria, Gianfederico; and Gaio, Pietro, 3,862,979.
Dorwart, Charles Edward, Jr.; Bierly, Meade Goodman; Fendrich, Charles Nelson, Jr.; and Roland, John Thomas, to AMP Incorporated. Hermetically sealed adjustment for high voltage potentiometer. 3,863,194, Cl. 338-164.000.
Doty, Edward Neal. Method and apparatus for finding the center amplitude of each pulse of a train of random amplitude asymmetric pulses. 3,863,160, Cl. 328-117.000.
Doty, Edward Neal: *See—*
Coulter, Wallace H.; and Doty, Edward Neal, 3,863,159.
Doty, Robert Kenneth: *See—*
Strunc, Robert Winfield; and Doty, Robert Kenneth, 3,862,701.
Dow Chemical Company, The: *See—*
Barron, Benny G.; and Dunlap, James R., 3,862,879.
Brady, Thomas P., 3,862,939.
Decker, Dalton L.; Moore, Carl; and Tousignant, William F., 3,862,978.
Edamura, Fred Y.; McKendry, Lennon H.; and Larsen, Eric R., 3,862,974.
Flynn, James P.; Lane, George A.; and Plomer, John J., 3,862,864.
Goralski, Christian T., 3,862,935.
Johnston, Charles, 3,863,009.
Markley, Lowell D., 3,862,952.
Mitchell, Albertha B.; Moppett, Charles E.; and Brady, Thomas P., 3,862,940.
Spillers, Frank Wayne, 3,862,868.
Down Bros.: *See—*
Austin, Roger Tilston, 3,862,631.
Doyle, Walter M.; and White, Matthew B., to Philco-Ford Corporation. Differential retrocommunicator. 3,863,064, Cl. 250-199.000.
Drenten, Bruce J.; and Breiner, Frank S., to Steelcase, Inc. Label holder. 3,862,506, Cl. 40-325.000.
Driggers, Randolph W.: *See—*
Attaway, Julian J.; and Driggers, Randolph W., 3,862,531.
Dropik, Sylvester J.: *See—*
Rostron, Joseph R.; and Dropik, Sylvester J., 3,863,041.
Dubanek, Jan: *See—*
Holub, Josef; Lzicar, Josef; Dubanek, Jan; and Stech, Jaroslav, 3,862,647.
Duly, Michael J.: *See—*
Mori, Jack K.; and Duly, Michael J., 3,862,691.
Dunlap, James R.: *See—*
Barron, Benny G.; and Dunlap, James R., 3,862,879.
Duo-Fast Corporation: *See—*
Mosetich, Ronald J.; and Mosetich, Joseph, 3,862,685.
Dutcher, Daniel P., to Hoerner Waldorf Corporation. Reclosable plug type dispensing package. 3,862,703, Cl. 221-63.000.
Dvorak, Jan: *See—*
Wichterle, Otto; Kliment, Karel; Vacik, Jiri; Ott, Zdenek; Stol, Miroslav; and Dvorak, Jan, 3,862,452.
E. F. Johnson Company: *See—*
Bowen, Jack L., 3,863,195.
E. R. Squibb & Sons, Inc.: *See—*
Breuer, Herman; and Treuner, Uwe, 3,862,941.
Denzel, Theodor; and Hoehn, Hans, 3,862,947.
Easter, Finis Claude; Aires, Ramon Hess; and Goldberg, Edwin Allen, to RCA Corporation. Regulated power supply including forward feed. 3,863,140, Cl. 323-17.000.

Eastman Kodak Company: *See—*
Bissonette, Vernon Leon, 3,862,842.
De Jager, Donald, 3,862,796.
McGuckin, Hugh Gerald, 3,862,855.
Pond, David M., 3,862,988.

Eaton Corporation: *See—*
Balban, Morton S., 3,863,208.
Bechman, William H.; and Barrett, Harry G., 3,862,769.
Chute, Richard, 3,862,767.
Collins, Marcus Howard, 3,862,678.
Hantack, Melvin E., 3,862,820.
Jaeschke, Ralph L., 3,863,083.
Swedberg, Nils Einar, 3,862,814.
Tappen, Harold B.; and Corwin, John Roy, 3,862,672.
Ward, Harold R., 3,862,668.
Wolansky, John, 3,862,667.

Eaton, Robert F. Panel construction for displays. 3,862,523, Cl. 52-27.000.

Ebata, Hiroyuki, to Yoshida Kogyo Kabushiki Kaisha. End stop means for sliding clasp fasteners. 3,862,474, Cl. 24-205.11F.

Eckbreth, Alan C.; and Owen, Frank S., to United Aircraft Corporation. Apparatus and method for enhancing power deposition in convective electric discharges. 3,863,103, Cl. 315-111.200.

Eckert, Hans-Werner, to Henkel & Cie GmbH. Washing agents containing an aminocarbonamide textile softener and process of washing and softening textiles. 3,862,905, Cl. 252-98.000.

Edamura, Fred Y.; McKendry, Lennon H.; and Larsen, Eric R., to Dow Chemical Company, The. Substituted phenylthio-thiolacetate esters. 3,862,974, Cl. 260-455.00R.

Eddey, Everett E.; Favor, James N.; and Meilander, Willard C., to Goodyear Aerospace Corporation. Magnetic memory array. 3,863,233, Cl. 340-174.0PW.

Eff, Christian A., to General Electric Company. Incinerator ash removal apparatus. 3,862,609, Cl. 110-8.00R.

Egawa, Mitsuru; and Takano, Tomoteru, to Tokyo Seimitsu Co., Ltd. Method and apparatus for adjusting zero point automatically. 3,863,165, Cl. 330-2.000.

Ehlert, Clarence W. Rotary engine. 3,862,623, Cl. 123-8.350.

Ehret, Rudolph, to Pfaulder-werke AG. Measuring instrument for the electrical determination of damage to an enamel layer. 3,863,146, Cl. 324-54.000.

Eickmann, Karl. Pressure applying arrangement for a multiple flow machine. 3,862,589, Cl. 91-487.000.

Eilingsfeld, Heinz; and Schwantje, Gerd, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Certain pyrimidine-containing dyestuffs. 3,862,944, Cl. 260-256.50R.

Elas, Robert E.: *See—*
Isham, Carroll E.; and Elas, Robert E., 3,862,499.

Eldridge, Kenneth L., Jr.: *See—*
Ozimek, Chester E.; and Eldridge, Kenneth L., Jr., 3,862,679.

Electric Power Storage Limited: *See—*
Gillibrand, Maurice Ivan; and Brown, Gordon, 3,862,862.

Electro Signal Lab. Inc.: *See—*
Steele, Donald F.; and Enemark, Robert B., 3,863,076.

Electrohome Limited: *See—*
Sennik, John J., 3,863,096.

Electronic Associates Inc.: *See—*
Paschetto, Edward J., 3,863,117.

Electroprint, Inc.: *See—*
Klein, Enrique J., 3,863,261.

Elghani, Salah Elabd: *See—*
Koehler, Michael; Elghani, Salah Elabd; and Prinz, Richard, 3,862,998.

Elinder, Erik Gustav: *See—*
Jemseby, Anton Wilhelm; and Elinder, Erik Gustav, 3,862,501.

Elliott, Carl E. Piano loading trailer. 3,862,695, Cl. 214-374.000.

Ellis, John R. B.; and Pryor, Arthur W., to Chevron Research Company. Geothermal brine energy to generate power. 3,862,545, Cl. 60-641.000.

Emanuel, Alexander E.; and Vora, Jitendra P., to High Voltage Power Corporation. Short circuit sensing device for electromagnetic induction apparatus. 3,863,109, Cl. 317-14.00R.

Emmons, Floyd R.; and Rannenberg, George C., to United Aircraft Corporation. Flow control. 3,862,644, Cl. 137-486.000.

Enemark, Robert B.: *See—*
Steele, Donald F.; and Enemark, Robert B., 3,863,076.

Engebretsen, Einar O., to Hobart Corporation. Compactor drive system. 3,862,593, Cl. 100-53.000.

Engelfried, Werner: *See—*
Glaunsinger, Heinz; and Engelfried, Werner, 3,863,260.

England, Will Clarke. Rollable fulcrum balancing board recreational and exercise device provided with non-linear stabilization features. 3,862,768, Cl. 280-205.000.

English Clays Lovering Pochin & Company Limited: *See—*
Webster, John David; and Jewell, Thomas John, 3,862,921.

Enns, Mark K.: *See—*
Haley, Paul H.; and Enns, Mark K., 3,863,270.

Entschel, Roland; and Steinemann, Willy, to Fidelity Union Trust Company. Heterocyclic basic phenylazophenyl dyes containing a quaternized aminoalkylenecarboxamide. 3,862,929, Cl. 260-156.000.

Erath, Louis W., to Jensen, Owen F., III; and Jensen, Owen F., Jr., a part interest to each. Capacitance sensing apparatus. 3,863,147, Cl. 324-60.0CD.

Ermisch, Klaus: *See—*
Von Waclawiczek, Herbert Ritter; and Ermisch, Klaus, 3,862,834.

Ernsthausen, Roger E.; and Byrum, Bernard W., Jr., to Owens-Illinois, Inc. Gas discharge display and memory panel with magnesium oxide coatings. 3,863,089, Cl. 313-201.000.

ESB Incorporated: *See—*
Miller, Roy H.; Boyer, Charles J.; and Bohner, William R., 3,862,451.

Esclamadon, Christian: *See—*
Signouret, Jean-Baptiste; Labat, Yves; and Esclamadon, Christian, 3,862,922.

Escoffier, Raymond P.: *See—*
Johnson, Frederick W.; Trent, Dale W.; and Escoffier, Raymond P., 3,863,161.

Eshraghian, Kamran, to U.S. Philips Corporation. Speed measurement and indication apparatus. 3,863,153, Cl. 324-166.000.

Ethyl Corporation: *See—*
Beard, William Q., Jr., 3,862,996.
Scull, Herbert M., Jr., 3,862,835.

Ethyl Development Corporation: *See—*
Hafele, Robert X., 3,862,698.

Ettenberg, Michael; and Gilbert, Stephen Lee, to RCA Corporation. Method of making a semiconductor device. 3,862,859, Cl. 117-215.000.

Evans, Dorothy D.: *See—*
Evans, Frank E.; and Evans, Dorothy D., 3,862,759.

Evans, Frank E.; and Evans, Dorothy D. Wedge type golf club. 3,862,759, Cl. 273-167.00A.

Ewanizky, Theodore F., to United States of America, Army. Coaxial marx-bank driver circuit for pulse lasers. 3,863,105, Cl. 315-245.000.

Ex-Cell-O Corporation: *See—*
Hildreth, Richard S., 3,862,567.

Faiks, Frederick S.: *See—*
Scheerhorn, Douglas; Van Kuik, Dirk J.; Faiks, Frederick S.; and Hodges, Ronald R., 3,862,785.

Fairchild Camera and Instrument Corporation: *See—*
Kamins, Theodore I., 3,862,852.

Fannin, Larry L., to Nu-Look Fashions, Inc. Capless wig construction. 3,862,638, Cl. 132-53.000.

Farrell, Sherman R.; Demeter, Laszlo; and Woods, Peter Ghormley. Broad beam electron gun. 3,863,163, Cl. 328-233.000.

Favor, James N.: *See—*
Eddey, Everett E.; Favor, James N.; and Meilander, Willard C., 3,863,233.

Fay, Clinton K.; and Akkerman, Neil H. Log debarking apparatus. 3,862,653, Cl. 144-208.00J.

Faye, John S.: *See—*
Fuss, James B.; and Faye, John S., 3,862,533.

Fazniewscy, Karl-Heinz: *See—*
Rudolph, Werner; Massonne, Joachim; and Fazniewscy, Karl-Heinz, 3,862,971.

Fazzo, Vincenzo. Ignition device for explosion engines. 3,862,625, Cl. 123-148.0DC.

Fearnside, Kenneth: *See—*
Davies, Terrence Ardern; Garner, Geoffrey Michael; Hurditch, Rodney John; Lynch, James Thomas; Lanham, Tony Edward; and Fearnside, Kenneth, 3,862,790.

Feldman, Peter Blandford, to SIDAPLAX. Laminate for refrigeration apparatus, refrigerator and method of forming same. 3,862,880, Cl. 161-160.000.

Felix, Ernst; and Feller, Peter, to Zellweger, Ltd. Control of the filling level of silver reservoirs in the textile industry. 3,862,473, Cl. 19-240.000.

Feller, Peter: *See—*
Felix, Ernst; and Feller, Peter, 3,862,473.

Fellrath, Paul-Henri; and Lavanchy, Gerard, to Societe d'Exploitation des Cables Electriques Systeme Berthoud Borel & Cie. Method and apparatus for measuring the resistance, resistivity or the cross-sectional area of an electrical conductor such as a wire, cable or bar. 3,863,148, Cl. 324-64.000.

Fencl, Vernon; Luedi, Hans R.; Stettler, Christian H.; and Roze, Alberts, to Grotnes Machine Works, Inc. Truck rim forming apparatus. 3,862,563, Cl. 72-403.000.

Fendrich, Charles Nelson, Jr.: *See—*
Dorwart, Charles Edward, Jr.; Bierly, Meade Goodman; Fendrich, Charles Nelson, Jr.; and Roland, John Thomas, 3,863,194.

Fernandes, Joseph F., to United Aircraft Products, Inc. Modular environmental control system. 3,862,549, Cl. 62-419.000.

Ferrar, Carl M., to United Aircraft Corporation. Apparatus for the production of laser radiation from a metal vapor. 3,863,178, Cl. 331-94.50G.

Ferraris Development and Engineering Company Limited: *See—*
Williams, Garnet Montague Eveleigh, 3,862,628.

Fiber Bond Corporation: *See—*
Mednick, Edward, 3,862,522.

Fidelity Union Trust Company: *See—*
Entschel, Roland; and Steinemann, Willy, 3,862,929.

Field, Joseph H.; and McCrea, Donald H., to Benfield Corporation; The. Method of removing carbon dioxide from gases. 3,863,003, Cl. 423-232.000.

Fieser, Arthur H.; Anderson, Charles H.; and Mobley, Loreley S., to AF Industries Inc., by said Fieser and Anderson. Metal slab conditioning system. 3,862,749, Cl. 148-9.500.

Finger, Eugene P.: *See—*
Marwell, Edward M.; and Finger, Eugene P., 3,863,154.

Finley, John G.: *See—*
Peterson, Lenart A.; and Finley, John G., 3,862,869.

Firm of Constantin Rauch, The: *See—*
Bahrle, Willy; and Weigle, Dieter, 3,862,588.
Fischer, Adolf. Herbicidal mixture of thioalkyl carbamates and 1-phenyl-4-amino-5-halopyridazone-(6) or salts thereof. 3,862,832, Cl. 71-92.000.
Fischer & Porter Co.: *See—*
Sato, Makoto; and Schmoock, Roy F., 3,863,172.
Fisher, Michael H.; Smith, George B.; and Hoff, Dale R., to Merck & Co., Inc. Stabilized oxadiazole anthelmintic compositions. 3,863,012, Cl. 424-272.000.
Fisher, Robert C. Seat belt retractor with electric control switch. 3,862,727, Cl. 242-107.400.
Fisher, Robert E.; and Matejcic, Leonard S. Sailboat balance seat. 3,862,456, Cl. 9-7.000.
Fitch, Frederick T.; and Braun, Ann B., to W. R. Grace & Co. Microspheres of urania and other materials. 3,862,908, Cl. 252-301.10S.
Fixler, Jon S., to Industrial Patent Development Corporation. Stereophonic transducer arrangement. 3,863,028, Cl. 179-1.0GQ.
Flair, Henry Joseph, to Illinois Tool Works, Inc. Material grinding mechanism. 3,862,721, Cl. 241-236.000.
Fletcher, Robert C.: *See—*
Crofut, Walter A.; Fletcher, Robert C.; Tarasevich, Andrew; and Andersen, Rodney J., 3,863,262.
Flexible Company, The: *See—*
Swank, David T., 3,862,470.
Fluoret, George Rogelio, to Abbott Laboratorics. Simplified method for the manufacture of the thyrotropin release hormone. 3,862,926, Cl. 260-112.500.
Flynn, James P.; Lane, George A.; and Plomer, John J., to Dow Chemical Company, The. Plasticized nitrocellulose propellant compositions containing hydrazinium nitroformate and aluminum hydride. 3,862,864, Cl. 149-19.800.
FMC Corporation: *See—*
Bunnelle, Philip R., 3,862,541.
Follett, John L. Heat and flow sensitive safety shut-off valve. 3,862,641, Cl. 137-75.000.
Fortune, William S. Portable desoldering tool. 3,862,468, Cl. 15-341.000.
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., to Majik-Ironers, Inc. Ironing apparatus. 3,862,503, Cl. 38-30.000.
Foster, John; and Walker, Richard John, to Amalgamated Dental Company Limited, The. Dental filling materials. 3,862,920, Cl. 260-42.520.
Foster, Thomas E.: *See—*
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., 3,862,503.
Foster, Wilbur A.: *See—*
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., 3,862,503.
Franz, Arvel O.; and Gray, John Lawrence. Slurry unloading of bulk alkaline earth metal carbonates. 3,862,746, Cl. 259-4.000.
Franz Buettner AG: *See—*
Martin, Alfred, 3,862,597.
Freeman, Percy F. Bale forming and tying mechanism. 3,862,592, Cl. 100-4.000.
Frey, Charles E.: *See—*
Boughnou, Thomas R.; Buss, Kenneth G.; and Frey, Charles E., 3,863,259.
Friday, Robert E., to King Radio Corporation. Slant range correction circuit. 3,863,053, Cl. 235-150.200.
Fried Krupp Gesellschaft mit beschrankter Haftung: *See—*
Von Waclawiczek, Herbert Ritter; and Ermisch, Klaus, 3,862,884.
Fried, Michari; Moeller, Rolf; Zuern, Ludwig; and Stahnecker, Erhard, to Badische Anilin-& Soda-Fabrik Aktiengesellschaft. Process for aqueous polymerization of N-vinylpyrrolidone utilizing finely divided suspension of water insoluble catalyst. 3,862,915, Cl. 260-29.6HN.
Fritz & Associates, a division of Ozaukee Airways, Ltd.: *See—*
Brown, William E., 3,862,806.
Fritz, John H.: *See—*
Weiler, Donald J.; Fritz, John H.; and Lewis, B. Frank, 3,862,656.
Froehlig, Rudolph A., to Modern Album and Finishing Co., Inc. Package construction. 3,862,713, Cl. 229-33.000.
Fuhrmann, Robert: *See—*
Sifniades, Stylianos; Fuhrmann, Robert; and Tunick, Allen A., 3,862,985.
Fujii, Toru, to Olympus Optical Co., Ltd. Large-aperture ratio retrofocus lens system. 3,862,794, Cl. 350-214.000.
Fujiwara, Katsuji. Electrically driven valve apparatus. 3,862,739, Cl. 251-130.000.
Fukuda, Yutaka: *See—*
Shimotsuma, Teruo; Sano, Kazuo; and Fukuda, Yutaka, 3,862,907.
Fukushima, Osamu; Sato, Masamichi; and Matsumoto, Seiji, to Rank Xerox, Ltd. Electro-photographic apparatus. 3,862,619, Cl. 118-637.000.
Fukushima, Osamu: *See—*
Sato, Masamichi; and Fukushima, Osamu, 3,862,618.
Furukawa Electric Co., Ltd., The: *See—*
Kasai, Akira; Inui, Mitsuo; Hoshino, Nobuo; Hattori, Kenichi; Shiina, Naonori; and Nakae, Hiroyuki, 3,863,000.
Fuss, James B.; and Faye, John S. Truss system. 3,862,533, Cl. 52-643.000.
Fuston, Brantley, Jr., to Hoover Ball and Bearing Company. Concrete form panels and locking means therefor. 3,862,737, Cl. 249-196.000.
Gaines, John W.: *See—*
Packard, Norman M.; and Gaines, John W., 3,862,480.
Gaio, Pietro: *See—*
Gandolfi, Carmelo; Doria, Gianfederico; and Gaio, Pietro, 3,862,979.
Galbarini, Maso; and Cotta Ramusino, Francesco, to Innocenti Santeustacchio S.p.A. Gantry type large machine tool. 3,862,586, Cl. 90-11.00F.
Galella, Ottavio. Signaling apparatus. 3,863,207, Cl. 340-41.00R.
Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; Cunningham, Frank M.; and Danko, Oliver L., to Nupro Company. Butterfly valve. 3,862,740, Cl. 251-305.000.
Gallant, Reginald R., to Limbro Chemical Co., Inc. Device for quick alignment of any among grouped specimen areas on a plate with optical microscope axis. 3,862,793, Cl. 350-90.000.
Galvin, Aaron A., to Aerospace Research, Inc. Electromagnetic intrusion detection system. 3,863,240, Cl. 340-258.00C.
Gambino, Richard J., to International Business Machines Corporation. Method for making amorphous semiconductor thin films. 3,862,857, Cl. 117-201.000.
Gandolfi, Carmelo; Doria, Gianfederico; and Gaio, Pietro, to Carlo Erba S.p.A. 9-Desoxy-prosta-5,9(10),13-trienoic acid derivatives. 3,862,979, Cl. 260-514.00D.
Gardiner, Arthur Noel: *See—*
Pessell, Leopold; and Gardiner, Arthur Noel, 3,862,488.
Gardner-Denver Company: *See—*
Strecker, Gerald L.; and Schultz, Dennis L., 3,862,813.
Garin, Arlette; and Waast, Bernard, to Commissariat a L'Energie Atomique. Semiconductor localization detector. 3,863,072, Cl. 250-370.000.
Garner, Geoffrey Michael: *See—*
Davies, Terrence Ardern; Garner, Geoffrey Michael; Hurditch, Rodney John; Lynch, James Thomas; Lanham, Tony Edward; and Fearnside, Kenneth, 3,862,790.
Gates Rubber Company, The: *See—*
McClelland, Donald H.; and Devitt, John L., 3,862,861.
Gattus, Jean; and Mallet, Maurice, to Rhone-Poulenc S.A. Method of forming high elongation polymide-imide films. 3,862,897, Cl. 264-216.000.
Gehrke, Gunter: *See—*
Hohmann, Walter; Vollmann, Heinrich; Bien, Hans-Samuel; and Gehrke, Gunter, 3,862,967.
Gename, John L., to Popeil Brothers, Inc. Folding crank arm assembly. 3,862,725, Cl. 242-84.10J.
General Dynamics Corporation: *See—*
Ayers, Weston D.; and Hirsch, Joseph G., 3,862,477.
Weisinger, Martin Donald, 3,862,489.
General Electric Company: *See—*
Alexander, Harry Arnold, 3,863,224.
Brezosky, Bernard J., 3,862,786.
Eff, Christian A., 3,862,609.
Guth, Lauren W., 3,862,720.
Habegger, Richard J.; and Wargel, Stanley L., 3,862,493.
Herzog, Rollie R., 3,863,102.
Martzloff, Francois D., 3,863,111.
Pollard, Ernest M., 3,863,133.
Pollard, Ernest M., 3,863,134.
Richardson, Hugh H., 3,862,491.
Scheib, Paul E.; and Shumate, Robert H., 3,863,173.
Wood, David W., 3,863,199.
General Mills, Inc.: *See—*
Strommer, Palmer K., 3,863,019.
Yueh, Mao H., 3,863,017.
General Motors Corporation: *See—*
Benson, James C., 3,862,673.
Cornell, Thomas V., 3,863,155.
Harmon, Kenneth B.; Bowers, George L.; and Livezey, William G., 3,862,585.
King, Robert M.; and Worman, William E., 3,862,781.
Lindbert, Brook A.; McCollum, Wesley L.; and Mertz, Edward H., 3,862,669.
O'Malley, John J., 3,862,581.
Raver, Louis J., 3,863,127.
Roland, James P.; and McKinnon, Matthew C., 3,863,210.
General Refractories Company: *See—*
Smoak, Richard H.; Staut, Ronald; and Burst, John F., 3,862,846.
General Tire and Rubber Company, The: *See—*
Welch, John A., 3,862,810.
Gentrix Engineering Ltd.: *See—*
Cebuliak, Steve E.; Leach, Clifford Harvey; and Westlake, John Henry, 3,863,150.
George, Hal E.: *See—*
Zajac, Theodore S.; and George, Hal E., 3,862,587.
Gernetzke, David W., to Wells Fargo & Company. Method for removing articles from envelopes. 3,862,694, Cl. 214-152.000.
Gersbach, John Edwin, to International Business Machines Corporation. Scr (or scs) memory array with internal and external load resistors. 3,863,229, Cl. 340-173.0FF.
Gervais, Edouard; and Chollet, Pierre, to Noranda Mines Limited. Heat treatment for wrought zinc-aluminum alloys. 3,862,863, Cl. 148-11.50R.
Geschickter, Charles F., to Geschickter Fund for Medical Research, The. Mannich derivatives of 4,4'-dihydroxy-3,3'dinitrobenzophenone. 3,862,936, Cl. 260-246.00B.
Geschickter Fund for Medical Research, The: *See—*
Geschickter, Charles F., 3,862,936.

Getzin, Allan R., to American Air Filter Company, Inc. Unit filter retaining means. 3,862,903, Cl. 210-232.000.

Giacino, Christopher: *See—*
Wilson, Richard A.; Mussinan, Cynthia; Katz, Ira; Giacino, Christopher; Sanderson, Anne; and Shuster, Edward J., 3,863,013.

Gilbert, Stephen Lee: *See—*
Ettenberg, Michael; and Gilbert, Stephen Lee, 3,862,859.

Gilchrist, Allan B. E., to SCM Corporation. Electrolytic cell method for transfer of dispersed solids from one liquid electrolyte to another with suppression of transfer of dispersing liquid. 3,862,893, Cl. 204-180.00R.

Gill, Stephen H.; Knell, Harvey A.; and Tucker, Joseph M., III, to Caterpillar Tractor Company. Front loading hydraulic excavator. 3,862,697, Cl. 214-763.000.

Gilles, Jack C., to B. F. Goodrich Company, The. Preparation of 2,4,6-tris(hydroxybenzylthio)triazines. 3,862,942, Cl. 260-248.0CS.

Gillett, John Brian: *See—*
Atwood, Leon Warner; Balasubramanian, Peruvemba Swaminatha; and Gillett, John Brian, 3,863,135.

Gillibrand, Maurice Ivan; and Brown, Gordon, to Electric Power Storage Limited. Process of making sheathed battery electrodes. 3,862,862, Cl. 136-148.000.

Gillott, Donald H.; and Simes, James G., to Sutter Hospitals Medical Research Foundation. Permanent magnet translational motor with auxiliary electromagnet. 3,863,082, Cl. 310-27.000.

Giolito, Francois: *See—*
Demoures, Bernard; Llauro, Daniel; and Giolito, Francois, 3,862,981.

Giorgini, Norman L., to Minnesota Mining and Manufacturing Company. Lateral edge paper guide. 3,862,753, Cl. 271-171.000.

Glance, Bernard; and Schneider, Martin Victor, to Bell Telephone Laboratories, Incorporated. Mode suppressor for strip transmission lines. 3,863,181, Cl. 333-96.000.

Glaunsinger, Heinz; and Engelfried, Werner, to C. Terrot Soehne. Pattern band for multicolor circular knitting machines. 3,863,260, Cl. 346-1.000.

Godard, Pierre; and Patry, Eric, to Saft-Societe des Accumulateurs Fixes et de Traction. Supply system for an asynchronous motor. 3,863,123, Cl. 318-440.000.

Godfroid, Marcel: *See—*
Martens, Guy; and Godfroid, Marcel, 3,862,995.

Goetz, Albert: *See—*
Schwemmer, Martin; Bors, Hans; and Goetz, Albert, 3,862,553.

Goheen, Byron R. Runner-equipped ski pole. 3,862,765, Cl. 280-11.37H.

Goldberg, Edwin Allen: *See—*
Easter, Finis Claude; Aires, Ramon Hess; and Goldberg, Edwin Allen, 3,863,140.

Goldberg, Raymond; and Shaw, Irving F., to West Laboratories, Inc. Finger protecting ampoule cap. 3,862,654, Cl. 150-52.00R.

Goldman, Irving M., to Pfizer Inc. Process for making esters of 6-(alpha-(carboxy)aryla-cetamido)penicillanic acids. 3,862,933, Cl. 260-239.100.

Gonsewski, Leonard E.; and Lind, Paul U., to GTE Automatic Electric Laboratories Incorporated. Data transmission method. 3,863,025, Cl. 178-69.50R.

Goo, Gee In, to United States of America, Navy. Ultra low power and ultra stable astable multivibrator. 3,863,179, Cl. 331-108.00D.

Goodyear Aerospace Corporation: *See—*
Eddey, Everett E.; Favor, James N.; and Meilander, Willard C., 3,863,233.

Gooley, Cornelius Leonard. Orientation indicating apparatus. 3,863,067, Cl. 250-231.00R.

Goralski, Christian T., to Dow Chemical Company, The. Brominated amides of sulfoacetic acid. 3,862,935, Cl. 260-246.00B.

Gorndt, John H.; Schmidt, Warren E.; and Peterson, Robert R., to Lord Corporation. Rotor blade retention system. 3,862,812, Cl. 416-141.000.

Gossett, Cyrille, to Societe Industrielle Honeywell Bull (Societe Anonyme). Control system for coded data transmission. 3,863,223, Cl. 340-172.500.

Gottwald, Ken; Burkoth, Terry; and Ullman, Edwin F., to Syva Company. 2'Quinoldinyl glycerol compounds. 3,862,951, Cl. 260-289.00R.

Gould, James S.; and Gould, Samuel. Light screen for pedestrian traffic signal. 3,863,251, Cl. 340-382.000.

Gould, Samuel: *See—*
Gould, James S.; and Gould, Samuel, 3,863,251.

Graafsma, Richard S.; and Morgan, George H., to Auto Specialties Manufacturing Company. Screw jack pinion gear and method of making same. 3,862,577, Cl. 74-432.000.

Graafsma, Richard S.; Nehrig, R. Harlan; and White, Nicholas J., to Auto Specialties Manufacturing Company. Vertical stress-side load member screw jack. 3,862,743, Cl. 254-100.000.

Graco Inc.: *See—*
Parson, Ronald F., 3,863,180.

Granseus, Folke Evert; and Borgstrom, Klas Ingvar Helmer, to Aktiebolaget Platmanufaktur. Apparatus for manufacturing caps of a foil of plastics material for sealing cups, bottles, jars and the like. 3,862,816, Cl. 425-292.000.

Grant, David C., Jr.: *See—*
Yntema, George Busey; Grant, David C., Jr.; and Warner, Richard T., 3,862,803.

Grant, Norman H., to American Home Products Corporation. Somatostatin as stimulant of luteinizing hormone secretion. 3,863,008, Cl. 424-177.000.

Graves, James E. A protective edge weighted cover cloth. 3,862,876, Cl. 161-44.000.

Gray, John Lawrence: *See—*
Franz, Arvel O.; and Gray, John Lawrence, 3,862,746.

Great Lakes Instruments, Inc.: *See—*
King, Karl Lewis; and Arrington, James R., 3,862,895.

Green, Cyril Robert, to Medio, Mario D.; and Medio, Grace E., part interest to each. Portable crimping tool. 3,862,482, Cl. 29-203.0DT.

Green, Harold A.; and Like, Burton M., to Millmaster Onyx Corporation. Process and composition for cleaning fibrous material. 3,862,823, Cl. 8-137.000.

Greenspan, Donald J. Medical office facility with two or more examining rooms having a common equipment core area. 3,862,525, Cl. 52-64.000.

Greenwood, Ivan A.: *See—*
Simpson, James H.; Bayley, Donald S.; and Greenwood, Ivan A., 3,863,144.

Greven, Hendrik Marie: *See—*
De Wied, David; and Greven, Hendrik Marie, 3,862,928.

Grey, Irving R. Waterproof mechanically protected sensor package and method of installation. 3,863,192, Cl. 338-2.000.

Griffis, Edgar E.: *See—*
Martin, Roger C., 3,862,471.

Grigsby, Albert J.: *See—*
Presson, Robert D.; and Grigsby, Albert J., 3,862,890.

Grinshpun, Mark Izrailevich; Dobkin, Igor Iosifovich; Kurenkov, Gennady Fedorovich; and Bushev, Alexandr Vasilievich. Feed apparatus of tube cold rolling mill. 3,862,560, Cl. 72-252.000.

Grise, Frederick G. J.; and Lovell, Walter. Mixing materials in containers. 3,862,748, Cl. 259-122.000.

Grivas, John C., to Sherwin-Williams Company, The. Process for the preparation of 1,2-benzisothiazolin 3-ones. 3,862,955, Cl. 260-304.000.

Grotnes Machine Works, Inc.: *See—*
Fencl, Vernon; Luedi, Hans R.; Stettler, Christian H.; and Roze, Alberts, 3,862,563.

Gruppo Lepetit S.p.A.: *See—*
Cricchio, Renato; and Lancini, Giancarlo, 3,862,934.
Omodei-Sale, Amedeo, 3,862,954.

GTE Automatic Electric Laboratories Incorporated: *See—*
Chen, Chungmin; Kelly, Michael J.; and Rekiere, Bernard J., 3,863,033.
Chiz, Donald A., 3,862,745.
Gonsewski, Leonard E.; and Lind, Paul U., 3,863,025.
Litchfield, Kenneth W., 3,862,536.
McCormick, Maurice D., 3,863,044.
Mila, Truman R., 3,863,216.
Mills, Jeffrey P., 3,863,030.
Pulles, Eduard J., 3,862,580.
Sanabria, Rafael A., 3,863,227.
Smith, Eugene C., 3,862,891.
Zimmermann, Joseph J., 3,863,029.

GTE Sylvania Incorporated: *See—*
Jayne, Max L., 3,862,792.
Speigel, Kenneth, 3,863,086.

Guardian Electric Manufacturing Company: *See—*
Collette, Richard L.; Vojir, Frank S.; and Watts, Roger E., 3,863,052.

Gudmundsen, Richard L., to Braddock, William A., a part interest. Non-reusable locking device and method of use. 3,862,775, Cl. 292-327.000.

Gulf & Western Manufacturing Company: *See—*
Amidon, Charles Harold, Jr., 3,862,554.

Gumbrecht, Kurt Philipp: *See—*
Hock, Bernhard; and Gumbrecht, Kurt Philipp, 3,862,788.

Guth, Lauren W., to General Electric Company. Waste disposer installation. 3,862,720, Cl. 241-100.500.

Gutman, Arnold D., to Stauffer Chemical Company. O'beta alkane phosphates. 3,862,999, Cl. 260-956.000.

H. Berthold A.G.: *See—*
Buchin, Karl; and Scheunemann, Horst, 3,862,734.

Habegger, Richard J.; and Wargel, Stanley L., to General Electric Company. Apparatus and method for tying coils. 3,862,493, Cl. 112-121.200.

Hafele, Robert X., to Ethyl Development Corporation. Blow molded article of manufacture. 3,862,698, Cl. 215-1.00C.

Haferl, Peter Eduard, to RCA Corporation. Vertical deflection circuit. 3,863,106, Cl. 315-27.0TD.

Hafner, Otto P. Adjustable die and punch for sheet material fastening machines. 3,862,485, Cl. 29-200.00B.

Hagan, William K.: *See—*
Bell, David; and Hagan, William K., 3,862,636.

Hageman, Howard A., to Uniroyal, Inc. Sulfur-containing polyphenols. 3,862,991, Cl. 260-608.000.

Hahlganss, Gunther, to VDO Adolf Schindling GmbH. Apparatus for causing a meter to measure the rate of rotation of a shaft. 3,863,151, Cl. 324-167.000.

Haley, Paul H.; and Enns, Mark K. Hybrid computer system including an analog calculator for rapidly generating electric power system loadflow solutions. 3,863,270, Cl. 444-1.000.

Hall, Christopher: *See—*
Black, Robert; and Hall, Christopher, 3,862,716.

Hamann, Herman C.; and Stellwagen, William, Jr., to Rohm and Haas Company. Suspension polymerization in brine of uniform spherical polymer beads. 3,862,924, Cl. 260-88.1PA.

Hamazaki, Yoshiharu: *See*—
Yoshitani, Yutaka; and Hamazaki, Yoshiharu, 3,862,558.
Hanamura, Tomoaki; Ijiri, Ryuzo; and Mori, Masami, to Idemitso Kosan Kabushiki Kaisha. Process for producing granular active carbon from a mixture of asphalt and elementary sulfur. 3,862,962, Cl. 252-422.000.
Hans, Wendel J., Sr. Suction electrode. 3,862,627, Cl. 128-2.06E.
Hansen, Charles M.: *See*—
McGuire, Kathleen A.; Hansen, Charles M.; and Christenson, Roger M., 3,862,894.
Hansen, Robert L., to Minnesota Mining and Manufacturing Company. Carbodiimide catalysts and processes. 3,862,989, Cl. 260-606.50P.
Hanson, Russell W., to Rockwell International Corporation. Frequency converting apparatus. 3,863,136, Cl. 321-60.000.
Hantack, Melvin E., to Eaton Corporation. Direct burner ignition system. 3,862,820, Cl. 431-66.000.
Harautuneian, Andrew, to American Hospital Supply Corporation. Smooth tipped endotracheal tube. 3,862,635, Cl. 128-351.000.
Hardwick, Albert J.: *See*—
Harvey, Edgar L.; and Hardwick, Albert J., 3,863,088.
Harma, Lasse: *See*—
Rysti, Alpo; Harma, Lasse; and Sjodahl, Kurt, 3,862,496.
Harmon, Kenneth B.; Bowers, George L.; and Livezey, William G., to General Motors Corporation. Method of manufacturing tapered involute splines. 3,862,585, Cl. 90-2.000.
Harnsberger, Bobby G.: *See*—
Curtice, Beverly A.; and Harnsberger, Bobby G., 3,862,663.
Harrell, John W.: *See*—
Patton, Bobbie J.; Sexton, James H.; and Harrell, John W., 3,863,203.
Harry S. Peterson Company: *See*—
Peterson, Charles M., 3,862,527.
Harth, Wolfgang, Dr.; and Muller, Jorg, to Licentia Patent-Verwaltungs-G.m.b.H. Parametric moving field amplifier. 3,863,167, Cl. 330-4.600.
Hartz, Billy J. Parallel attachment for skis. 3,862,764, Cl. 280-11.37E.
Harvey, Bruce J., to Bendix Corporation, The. Exhaust manifold air injection system. 3,862,540, Cl. 60-290.000.
Harvey, Edgar L.; and Hardwick, Albert J., to Burroughs Corporation. Dot matrix display panel having a plurality of display registers. 3,863,088, Cl. 313-198.000.
Hasebe, Sukehiro, to Copal Company Limited. Synchronous motor. 3,863,084, Cl. 310-126.000.
Hasenbein, Alfred F. Radiation controlled security lock. 3,863,115, Cl. 317-124.000.
Hassler, Stephen P.: *See*—
Kelly, Robert W.; and Hassler, Stephen P., 3,863,145.
Hassmann, Volker: *See*—
Ruechardt, Christoph; Hassmann, Volker; Quadbeck-Seeger, Hans-Juergen; and Armbrust, Herbert, 3,862,958.
Hatswell, John Sidney: *See*—
Sloboda, Meczyslaw Herman; and Hatswell, John Sidney, 3,862,838.
Hattori, Kenichi: *See*—
Kasai, Akira; Inui, Mitsuo; Hoshino, Nobuo; Hattori, Kenichi; Shiina, Naonori; and Nakae, Hiroyuki, 3,863,000.
Haupt, Hans O., to CRS Industries, Inc. Aerodynamic/electrodynamic filter system. 3,862,826, Cl. 55-112.000.
Havera, Herbert John, to Miles Laboratories, Inc. N-benzyl-N-[2-phenyl-2-(4-phenyl-1-piperidyl)ethyl] propionamide para-chlorobenzene sulfonate. 3,862,946, Cl. 260-293.760.
Hawthorne, Nathaniel F., to Bartizan Corporation. Printing device. 3,862,598, Cl. 101-269.000.
Hayworth, Curtis B., to World Patent Development Corporation. Solutions of polyvinyl acetals with phenolic antioxidant in preparation for restoring and/or preserving papers. 3,862,916, Cl. 260-29.6ME.
Headway Research, Inc.: *See*—
Shipman, Vern D., 3,862,856.
Health Technology Labs, Inc.: *See*—
Bell, David; and Hagan, William K., 3,862,636.
Hechler, Valentine, IV. Anti-backflow water control and solution proportioner. 3,862,640, Cl. 137-1.000.
Hechtl, Wolfgang: *See*—
Nitzsche, Siegfried; Hittmair, Paul; Hechtl, Wolfgang; Wohlfarth, Ernst; and Mittermeier, Manfred, 3,862,919.
Heikkinen, Leo L. Apparatus for measuring, cutting and splitting timber. 3,862,651, Cl. 144-3.00K.
Heinemann Electric Company: *See*—
Nicol, Ronald, 3,863,042.
Heiney, Harold Gregory, to United Aircraft Corporation. Fas actuation system. 3,862,730, Cl. 244-83.00D.
Heinrich, Wilhelm. Front panel and partition holder for display shelf. 3,862,784, Cl. 312-140.000.
Held, Gerhard; and Balle, Walter, to Leonhard Herbert Maschinenfabrik. Drum for building and shaping blanks for radial-ply tyres. 3,862,871, Cl. 156-415.000.
Hellerbach, Joseph, to Hoffmann-La Roche Inc. 1-Hydryoxymethyl-amino-2-alkyl-or allyl-2-(3'-methoxy-phenyl)-chchlohexanes. 3,862,986, Cl. 260-570.5CA.
Hendrick, Clive A., to Zoecon Corporation. 5-Chloro-2,4-diolefinic fatty acids and esters. 3,862,970, Cl. 260-408.000.
Henkel & Cie GmbH: *See*—
Eckert, Hans-Werner, 3,862,905.
Werner, Lothar; and Schneider, Werner, 3,862,965.
Hennessey, William Michael: *See*—
Kuchinsky, Saul; Wolfe, Roger Ward; Maloney, Thomas Christopher; and Hennessey, William Michael, 3,862,476.
Henrick, Clive A., to Zoecon Corporation. 4-Halo-2,4-diolefinic fatty acids and esters. 3,862,969, Cl. 260-408.000.
Henson, James A. Nut harvesting machine. 3,862,538, Cl. 56-328.00R.
Herro, Richard E., to Dearborn Rubber Corporation. Device for forming polygonal voids in concrete members. 3,862,736, Cl. 249-65.000.
Herzog, Rollie R., to General Electric Company. Fluorescent lamp dimming circuit employing an improved auxiliary circuit. 3,863,102, Cl. 315-105.000.
Heslinga, Lammert; Pabon, Hendrik Jacob Johannes; and van Dorp, David Adriaan, to Lever Brothers Company. Process for preparing Unsaturated Carboxylic Acids. 3,862,972, Cl. 260-413.000.
Hester, Jackson B., Jr.; and Szmuszkovicz, Jacob, to Upjohn Company, The. 2,4-Dihydro-2-substituted-1H-s-triazola[4,3-a][1,4]-benzodiazepines. 3,862,956, Cl. 260-308.00R.
Hewlett-Packard Company: *See*—
Rode, France; Crowley, William L., Jr.; Walker, Alexander D. R.; and Cochran, David S., 3,863,060.
Heynisch, Hinrich; Poeschl, Klaus; and Veith, Werner, to Siemens Aktiengesellschaft. Transit time tube having extremely low phase distortion. 3,863,092, Cl. 315-3.600.
Hickner, George B.: *See*—
Blatter, Albert; Kasselmann, John T.; and Hickner, George B., 3,862,675.
High Voltage Power Corporation: *See*—
Emanuel, Alexander E.; and Vora, Jitendra P., 3,863,109.
Hildreth, Richard S., to Ex-Cell-O Corporation. Tooth forming tool. 3,862,567, Cl. 72-469.000.
Hilles, Lewis M., to Massa Corporation. Acoustically activated proximity sensor switch. 3,863,196, Cl. 340-1.00R.
Hilsinger, Lowell C. Storage container. 3,862,787, Cl. 312-285.000.
Hinman, Clyde D., to Union Carbide Corporation. Temperature control apparatus for a centrifugal-type chemistry analyzer. 3,863,049, Cl. 219-389.000.
Hinsch, Kurt W., to Kimberly-Clark Corporation. Surgical drape having integral leggings and method of making. 3,862,632, Cl. 128-132.00D.
Hirsch, Joseph G.: *See*—
Ayers, Weston D.; and Hirsch, Joseph G., 3,862,477.
Hitachi, Ltd.: *See*—
Hurukawa, Toshio; Yamazaki, Eiichi; and Kanai, Hiromi, 3,863,091.
Kaji, Tetsunori, 3,863,221.
Mishima, Nobuo; Yamaguchi, Takeshi; Yoshizawa, Sozaburo; Kobayashi, Torao; and Yamade, Takashi, 3,863,137.
Oka, Mitsunori; Yamamoto, Shinji; and Kadota, Shozo, 3,863,218.
Osawa, Akira; and Yasuda, Hajime, 3,863,220.
Seki, Susumu; Noumi, Makoto; Takaoka, Tadashi; and Toriyama, Hisao, 3,863,059.
Tachibana, Kyozo, 3,863,119.
Tonomura, Akira; and Ohtaka, Tadashi, 3,863,095.
Hitachi Shipbuilding and Engineering Company, Ltd.: *See*—
Noma, Tetsuo; Nagao, Osamu; and Okano, Ichizu, 3,862,700.
Hittmair, Paul: *See*—
Nitzsche, Siegfried; Hittmair, Paul; Hechtl, Wolfgang; Wohlfarth, Ernst; and Mittermeier, Manfred, 3,862,919.
Hobart Corporation: *See*—
Engebretsen, Einar O., 3,862,593.
Russell, Herman F., 3,862,682.
Hock, Bernhard; and Gumbrecht, Kurt Philipp, to Sperry Rand Corporation. Drawer ejector device. 3,862,788, Cl. 312-294.000.
Hodges, Ronald R.: *See*—
Scheerhorn, Douglas; Van Kuik, Dirk J.; Faiks, Frederick S.; and Hodges, Ronald R., 3,862,785.
Hodosh, Milton. Method for desensitizing teeth. 3,863,006, Cl. 424-49.000.
Hoehn, Hans: *See*—
Denzel, Theodor; and Hoehn, Hans, 3,862,947.
Hoekstra, Harold D. Interlock for aircraft take-off safety monitor. 3,863,204, Cl. 340-27.00R.
Hoerner Waldorf Corporation: *See*—
Dutcher, Daniel P., 3,862,703.
Hoey, Charles Edwin, to Rohm and Haas Company. Apparatus for making non-woven pile fabric. 3,862,872, Cl. 156-435.000.
Hoff, Dale R.: *See*—
Fisher, Michael H.; Smith, George B.; and Hoff, Dale R., 3,863,012.
Hoffmann, Konrad Thanisch. Double beam reflectance photometer with switching mirror. 3,862,804, Cl. 356-93.000.
Hoffmann-La Roche Inc.: *See*—
Berger, Leo; and Corraz, Alfred John, 3,862,953.
Hellerbach, Joseph, 3,862,986.
Hofmann, Gunther: *See*—
Rentzsch, Max; and Hofmann, Gunther, 3,862,601.
Hohmann, Walter; Vollmann, Heinrich; Bien, Hans-Samuel; and Gehrke, Gunter, to Bayer Aktiengesellschaft. Tetra-α-substituted anthraquinone derivatives. 3,862,967, Cl. 260-377.000.
Hollins, Jesse R. Vehicle seat beltstarter motor interlock and sequential warning system. 3,863,209, Cl. 340-52.00E.
Holub, Josef; Lzicar, Josef; Dubanek, Jan; and Stech, Jaroslav, to Vyzkumny Ustav Bavlnarsky. Apparatus for directing weft thread into a groove of a rotary reed of weaving looms. 3,862,647, Cl. 139-12.000.

Holz, George E., to Burroughs Corporation. Display panel having an array of insulated strip electrodes. 3,863,087, Cl. 313-188.000.
Hombach, Rudolf; and Theisen, Dieter, to Bayer Aktiengesellschaft. Pressure sensitive adhesive of polyalkenamen and coumarone resin in organic solvent. 3,862,917, Cl. 260-33.60A.
Honeywell Inc.: *See—*
Rowell, William G., 3,863,238.
Wilwerding, Dennis J., 3,863,128.
Honeywell Information Systems, Inc.: *See—*
Ryburn, Scott W., 3,863,226.
Taylor, Donald R., 3,863,217.
Taylor, Donald R., 3,863,228.
Hoover Ball and Bearing Company: *See—*
Fuston, Brantley, Jr., 3,862,737.
Hopkins, Charles L. Automatic rear view mirror adjuster. 3,862,798, Cl. 350-278.000.
Hopper, Joan M.; and Dickey, Helen M. Modular rug construction. 3,862,874, Cl. 161-36.000.
Horix Manufacturing Company: *See—*
Waxlax, Chester E., 3,862,708.
Horowitz, Charles F.; and Klimek, Boleslaw, to Berg Manufacturing Company, The. Spring brake chamber control valve. 3,862,782, Cl. 303-40.000.
Horowitz, Irving; and Baker, John W. Tone signal switching system. 3,863,222, Cl. 340-171.0PF.
Hoshi, Hiroshi; Murakami, Keiichi; Maeda, Ichinari; and Susuki, Rinnosuke, to Lion Fat & Oil Co.; and Idemitsu Kosan Co., Ltd. Adsorbent for oils. 3,862,963, Cl. 252-428.000.
Hoshino, Mitsuo, to Sony Corporation. Pliant disk magnetic recording and/or reproducing apparatus. 3,863,266, Cl. 360-86.000.
Hoshino, Nobuo: *See—*
Kasai, Akira; Inui, Mitsuo; Hoshino, Nobuo; Hattori, Kenichi; Shiina, Naonori; and Nakae, Hiroyuki, 3,863,000.
Hosokawa, Minoru, to Kabushiki Kaisha Suwa Seikosha. Driving circuit for liquid crystal display cell. 3,863,247, Cl. 340-336.000.
Houlihan, William J., to Sandoz-Wander, Inc. 2-Hydroxyalkyl-4,5-dihydropyridazin-3(2H)-one derivatives. 3,862,943, Cl. 260-250.00A.
Hovey, Cecil C. Retractable ladder for pleasure boats. 3,862,670, Cl. 182-89.000.
Hughes, Harold L., to United States of America, Navy. Radiation-hardened cmos devices and circuits. 3,862,930, Cl. 117-201.000.
Hughes, Loren Vance: *See—*
Millies, Clarence Frederick; and Hughes, Loren Vance, 3,862,704.
Hull, Bradford N., to Robertshaw Controls Company. Thermal beam actuated electrical sequencer. 3,863,185, Cl. 337-44.000.
Hurditch, Rodney John: *See—*
Davies, Terrence Ardern; Garner, Geoffrey Michael; Hurditch, Rodney John; Lynch, James Thomas; Lanham, Tony Edward; and Fearnside, Kenneth, 3,862,790.
Hurukawa, Toshio; Yamazaki, Eiichi; and Kanai, Hiromi, to Hitachi, Ltd. Electron gun assembly with improved unitary lens system. 3,863,091, Cl. 313-452.000.
Hydromatik GmbH: *See—*
Stumpmeier, Fritz, 3,862,738.
I.W.S. Nominee Company Limited: *See—*
Smith, Donald; and Shepherd, John Michael, 3,862,711.
ICF De Padova S.r.l.: *See—*
Mazzucconi, Vittorio, 3,862,454.
Idemitso Kosan Kabushiki Kaisha: *See—*
Hanamura, Tomoaki; Ijiri, Ryuzo; and Mori, Masami, 3,862,962.
Idemitsu Kosan Co., Ltd: *See—*
Hoshi, Hiroshi; Murakami, Keiichi; Maeda, Ichinari; and Susuki, Rinnosuke, 3,862,963.
Iden, Floyd William, to International Telephone and Telegraph Corporation. Nonrotating tacan antenna. 3,863,255, Cl. 343-106.00R.
Iga, Atsushi: *See—*
Matsuura, Mikio; Iga, Atsushi; and Wakahata, Yasuo, 3,863,193.
Ijiri, Ryuzo: *See—*
Hanamura, Tomoaki; Ijiri, Ryuzo; and Mori, Masami, 3,862,962.
Ikeda, Yasuo, to Teac Corporation. Magnetic head. 3,863,268, Cl. 360-121.000.
Illinois Tool Works, Inc.: *See—*
Flair, Henry Joseph, 3,862,721.
Kovac, Michael, 3,862,614.
McArdle, Edward John, 3,862,486.
Illman, Walter F.; Malpass, Robert C.; and Conklin, Delano M., to Brulington Industries, Inc. Apparatus for applying hot melt size material to textile yarns. 3,862,475, Cl. 28-28.000.
Imperial Chemical Industries Limited: *See—*
Blythe, Anthony Reginald; and Reddish, Wilson, 3,863,108.
Newton, Alan Branford; Rose, John Brewster; and Leslie, Victor Jeffrey, 3,862,990.
Imramovsky, Rudolf: *See—*
Kramenic, Zdenek; Zabrodsky, Zdenek; Didkova, Juna; Kralove, Hradec; and Imramovsky, Rudolf, 3,862,649.
Indig, George Sanford; and Rentzepis, Peter Michael, to Bell Telephone Laboratories, Incorporated. Optical communications systems. 3,863,063, Cl. 250-199.000.
Industrial Patent Development Corporation: *See—*
Fixler, Jon S., 3,863,028.
Industriewerke Karlsruhe-Augsburg Aktiengesellschaft: *See—*
Schmitt, Roland, 3,862,684.
Infra Systems, Inc.: *See—*
Campanella, Angelo J., 3,863,071.
Inland Steel Company: *See—*
Broom, Gilbert R., 3,862,750.
Innocenti Santeustacchio S.p.A.: *See—*
Galbarini, Maso; and Cotta Ramusino, Francesco, 3,862,586.
Institut de Recherches de la Siderurgie Francaise: *See—*
Antoine, Jacques; and Mathieu, Jean-Jacques, 3,862,574.
Intel Corporation: *See—*
Regitz, William M.; and Reed, John A., 3,863,230.
Interlake, Inc.: *See—*
Armour, Frank K.; and Prince, Peter, 3,862,888.
Lowe, Earl F., Jr., 3,862,889.
International Business Machines Corporation: *See—*
Atwood, Leon Warner; Balasubramanian, Peruvemba Swaminatha; and Gillett, John Brian, 3,863,135.
Berkenblit, Melvin; Lussow, Robert O.; and Reisman, Arnold, 3,862,831.
Caragliano, Edward S.; and Nick, Howard H., 3,863,024.
Cowher, Melvyn E.; and Sedgwick, Thomas O., 3,862,858.
Gambino, Richard J., 3,862,857.
Gersbach, John Edwin, 3,863,229.
Johnson, Darrel D.; Kaufman, Carl L.; Lohrey, Fred H.; and Robbins, Gordon J., 3,863,232.
O'Hanlon, John F.; and Pennebaker, William B., 3,863,074.
Pennebaker, William Boone, Jr., 3,863,090.
Rohrer, Gene D., 3,863,219.
Zappe, Hans H., 3,863,078.
International Dynetics Corporation: *See—*
Longo, Joseph F., 3,862,595.
International Flavors & Fragrances Inc.: *See—*
Wilson, Richard A.; Mussinan, Cynthia; Katz, Ira; Giacino, Christopher; Sanderson, Anne; and Shuster, Edward J., 3,863,013.
International Harvester Company: *See—*
Packard, Norman M.; and Gaines, John W., 3,862,480.
International Standard Electric Corporation: *See—*
Colin, Jean-Marie Henri, 3,863,055.
Klinger, Roman, 3,863,174.
International Telephone and Telegraph Corporation: *See—*
Bogert, Warren D., 3,863,156.
Iden, Floyd William, 3,863,255.
Orthuber, Richard K., 3,863,094.
Orthuber, Richard Kaspar, 3,863,093.
Schlatter, Gerald Lance; and Miller, Charles Eveleigh, 3,862,568.
Inui, Mitsuo: *See—*
Kasai, Akira; Inui, Mitsuo; Hoshino Nobuo; Hattori, Kenichi; Shiina, Naonori; and Nakae, Hiroyuki, 3,863,000.
Iorwerth, Hesin ab: *See—*
Briggs, Russell M.; and Iorwerth, Hesin ab, 3,863,201.
Ironmonger, Edward Albert; and Billam, Roy, to Plessey Handel und Investments A.G. Light emitting diode assembly. 3,863,075, Cl. 250-552.000.
Irwin, Malcolm F.: *See—*
Thompson, Richard R.; and Irwin, Malcolm F., 3,862,575.
Isaac, Eirlys R.: *See—*
Kirby, Peter; and Isaac, Eirlys R., 3,862,959.
Isaacson, Anson; and Meyer, Burton C., to Marvin Glass & Associates. Articulated figure toy. 3,862,513, Cl. 46-119.000.
Isaksson, Lars Goran Torsten, to Teda-Lab I Eskilstuna AB. Abrasive grit exhaust system in grinding machines. 3,862,521, Cl. 51-273.000.
Isham, Carroll E.; and Elas, Robert E., to Scientific Drilling Controls. Well surveying apparatus. 3,862,499, Cl. 33-312.000.
Ishammar, Nils Gosta Sigvard. Food display device. 3,862,547, Cl. 62-246.000.
Itagaki, Takuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. System for receiving exposure inaccuracies in automatic cameras. 3,863,263, Cl. 354-24.000.
Itek Corporation: *See—*
Lerner, Harry, 3,862,843.
Ito, Hideo: *See—*
Sakabe, Koji; Ito, Hideo; and Katura, Nobuyuki, 3,862,660.
Ito, Isao. Windshield wiper blade. 3,862,465, Cl. 15-250.420.
Jabsen, Felix S. Cleaning apparatus. 3,862,466, Cl. 15-320.000.
Jabsen, Felix S., to Babcock & Wilcox Company, The. Fuel assembly for a nuclear reactor. 3,862,884, Cl. 176-78.000.
Jaeschke, Ralph L., to Eaton Corporation. Fluid-cooled dynamometer. 3,863,083, Cl. 310-52.000.
James, Glenn M. Adjustable tensioning device. 3,862,742, Cl. 254-78.000.
Jason, John J.: *See—*
Ringelheim, Harry M., deceased; Bleiberg, Shirley R., executrix; and Jason, John J., 3,862,504.
Jayne, Max L., to GTE Sylvania Incorporated. Electrical connector assembly. 3,862,792, Cl. 339-93.00C.
Jayne, William Weir. Vehicle wheel. 3,862,779, Cl. 301-63.0DD.
Jemseby, Anton Wilhelm; and Elinder, Erik Gustav. Documents verifiable as to their authenticity. 3,862,501, Cl. 35-2.000.
Jensen, Owen F., Jr.: *See—*
Erath, Louis W., 3,863,147.
Jensen, Owen F., III: *See—*
Erath, Louis W., 3,863,147.
Jeroma, Rudolf. Advertising devices. 3,862,505, Cl. 40-132.00R.
Jessen, Henry J.: *See—*
Dezelan, Joseph E.; and Jessen, Henry J., 3,862,643.
Jewell, Thomas John: *See—*
Webster, John David; and Jewell, Thomas John, 3,862,921.

Johnson, Darrel D.; Kaufman, Carl L.; Lohrey, Fred H.; and Robbins, Gordon J., to International Business Machines Corporation. Associative array. 3,863,232, Cl. 340-173.0AM.

Johnson, Donald Owen; and Marchiano, Anthony Rosario, to American Can Company. Self-adjusting cup dispenser and method. 3,862,702, Cl. 221-1.000.

Johnson, Earl Clinton, to Deere & Company. Tree shear head. 3,862,652, Cl. 144-34.00E.

Johnson, Frederick W.; Trent, Dale W.; and Escoffier, Raymond P., to Rockwell International Corporation. Digital method and apparatus for dynamically monitoring the frequency of a frequency varying signal. 3,863,161, Cl. 328-140.000.

Johnson, John R., to Owens-Illinois, Inc. Article alignment apparatus and method. 3,862,680, Cl. 198-30.000.

Johnson, John R.; and Ashcroft, Richard I., to Owens-Illinois, Inc. Apparatus for controlling web tension. 3,862,724, Cl. 242-75.430.

Johnson, Larry K., to Lawrence Brothers Inc. Rescue type door stop. 3,862,774, Cl. 292-228.000.

Johnson, Leo D., to United States of America, Navy. Rf hazard detector. 3,863,149, Cl. 324-72.500.

Johnson Matthey & Co., Limited: *See*—
Sloboda, Meczyslaw Herman; and Hatswell, John Sidney, 3,862,838.

Johnson, Wayne O.; Warner, Harlow L.; and Yih, Roy Y., to Rohm and Haas Company. Haloaniline derivatives as plant growth modifiers. 3,862,833, Cl. 71-121.000.

Johnston, Charles, to Dow Chemical Company, The. Certain glycine derivatives as potentiatars for tetracyclines. 3,863,009, Cl. 424-227.000.

Jorgensen, Sven Erik: *See*—
Wennerblom, Bengt Axel; and Jorgensen, Sven Erik, 3,862,901.

Jules, Edwin; and Levedahl, William J., to Teledyne, Inc. Series-connected thermionic energy converters. 3,863,081, Cl. 310-4.000.

Junge, Helmut; and Quadbeck-Seeger, Hans-Juergen, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Nitration of N-(2-cyanophenyl)-N′,N′-dialkylformamidines. 3,862,977, Cl. 260-465.00E.

Kabushiki Kaisha Ricoh: *See*—
Kasuya, Shozo, 3,862,849.

Kabushiki Kaisha Suwa Seikosha: *See*—
Hosokawa, Minoru, 3,863,247.
Yamaoka, Goichi; and Onikubo, Kazutoshi, 3,863,130.

Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Mase, Toshio, 3,863,047.

Kadi-Ogly, Ibragim Akhmedovich: *See*—
Shapiro, Aron Beniaminovich; Chernyavsky, Vladimir Pavlovich; and Kadi-Ogly, Ibragim Akhmedovich, 3,863,085.

Kadota, Shozo: *See*—
Oka, Mitsunori; Yamamoto, Shinji; and Kadota, Shozo, 3,863,218.

Kaij, Mats J.: *See*—
Mogensen, Palne; Smars, Erik; and Kaij, Mats J., 3,863,107.

Kaiser, Fritz; Lubs, Hans Joachim; Schaumann, Wolfgang; and Voigtlander, Wolfgang, to Boehringer Mannheim G.m.b.H. Gitoxigen indigitoxoside compounds and therapeutic compositions for combating cardiac insufficiency. 3,862,931, Cl. 260-210.500.

Kaji, Tetsunori, to Hitachi, Ltd. Method of driving liquid cell display panel. 3,863,221, Cl. 340-166.000.

Kali-Chemie Aktiengesellschaft: *See*—
Rudolph, Werner; Massonne, Joachim; and Fazniewscy, Karl-Heinz, 3,862,971.

Kalle Aktiengesellschaft: *See*—
Stolting, Klaus; Zimmermann, Hans-Georg; and Klos, Ewald, 3,862,594.

Kamins, Theodore I., to Fairchild Camera and Instrument Corporation. Method of obtaining high-quality thick films of polycrystalline silicone from dielectric isolation. 3,862,852, Cl. 117-106.00A.

Kamiyamaguchi, Masaru; Nakagawa, Kazuyoshi; and Nishimura, Masana, to Yamatake-Honeywell Company Limited. A yarn break detector utilizing a sensor for sensing the yarn static electricity. 3,863,241, Cl. 340-259.000.

Kanai, Hiromi: *See*—
Hurukawa, Toshio; Yamazaki, Eiichi; and Kanai, Hiromi, 3,863,091.

Kanda, Hiroshi, to Nisshin Oil Mills, Ltd., The. Process for the preparation of edible protein fibers. 3,863,015, Cl. 426-276.000.

Kang, George S.; and Berry, Allan E., to United States of America, Air Force. Passive ranging by time difference multi-path. 3,863,257, Cl. 343-112.00D.

Kano, Kunio; Kayama, Naohiro; Terashima, Hiroshi; and Nakagiri, Yoshitaka, to Ono Pharmaceutical Co., Ltd.; and Toyo Boseki Kabushiki Kaisha. Determination of uric acid in blood with uricase. 3,862,885, Cl. 195-103.50R.

Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Bergmann, Gerhard, 3,862,552.

Kasai, Akira; Inui, Mitsuo; Hoshino, Nobuo; Hattori, Kenichi; Shiina, Naonori; and Nakae, Hiroyuki, to Furukawa Electric Co., Ltd., The. Method of manufacturing a tough thermoplastic resin foam. 3,863,000, Cl. 264-45.500.

Kase, Walter: *See*—
Richter, Heinz; Kase, Walter; Kolle, Hans-Hermann; and Rothen, Johann, 3,862,559.

Kasselmann, John T.: *See*—
Blatter, Albert; Kasselmann, John T.; and Hickner, George B., 3,862,675.

Kasuya, Shozo, to Kabushiki Kaisha Ricoh. Method for preparation of developing solution for developing electrostatic latent images. 3,862,849, Cl. 117-37.0LE.

Katura, Nobuyuki: *See*—
Sakabe, Koji; Ito, Hideo; and Katura, Nobuyuki, 3,862,660.

Katz, Ira: *See*—
Wilson, Richard A.; Mussinan, Cynthia; Katz, Ira; Giacino, Christopher; Sanderson, Anne; and Shuster, Edward J., 3,863,013.

Kauderer, Alfred. Tool for swarf-producing machining operations. 3,862,478, Cl. 29-95.00R.

Kaufman, Carl L.: *See*—
Johnson, Darrel D.; Kaufman, Carl L.; Lohrey, Fred H.; and Robbins, Gordon J., 3,863,232.

Kawashima, Yoshichi, to Nippondenso Co., Ltd. Comparison amplifier. 3,863,171, Cl. 330-30.00D.

Kayama, Naohiro: *See*—
Kano, Kunio; Kayama, Naohiro; Terashima, Hiroshi; and Nakagiri, Yoshitaka, 3,862,885.

Kazantzis, George B.; and Nier, Richard E., to United States of America, Navy. Alu with end-around carry derived from auxiliary unit. 3,863,061, Cl. 235-175.000.

Keen, Everett M.: *See*—
Peppler, William S.; Keen, Everett M.; Siciliano, Anthony J.; and Baker, Graham, 3,862,621.

Kelly, Michael J.: *See*—
Chen, Chungmin; Kelly, Michael J.; and Rekiere, Bernard J., 3,863,033.

Kelly, Robert W.; and Hassler, Stephen P., to McGraw-Edison Company. Electrical fault detecting tool with fuse assembly and power line clamp device. 3,863,145, Cl. 324-51.000.

Kendall Company, The: *See*—
Marshall, Preston F., 3,862,867.

Kendall, Robert L.: *See*—
Vernooy, Burton; and Kendall, Robert L., 3,862,497.

Kent, George A., to Magnavox Company, The. Oscillator device having remote radiation-free switch means. 3,863,175, Cl. 331-67.000.

Kentro, Dan M.; and Cole, James W., to Molybdenum Corporation of America. Removal of lead from columbium mineral concentrate. 3,862,836, Cl. 75-84.000.

Kern, Loyd R., to Atlantic Richfield Company. Method and apparatus for electrical heating of hydrocarbonaceous formations. 3,862,662, Cl. 166-248.000.

Kerr, John W., Jr. Supplemental visual display for traffic signal. 3,863,214, Cl. 340-131.000.

Kessock, Eugene P. Gas and acetylene torch lighter. 3,863,112, Cl. 317-96.000.

Kilgore Corporation: *See*—
McManus, Hugh D.; Wigal, Voorhis F.; and Long, Robert S., 3,862,865.

Kilsdonk, Jan Albert: *See*—
Van Benschoten, Peter J.; and Kilsdonk, Jan Albert, 3,863,040.

Kim, Dong H.; and Santilli, Arthur A., to American Home Products Corporation. 4-Substituted-6-methoxy-2-phenyl-5-pyrimidine carboxylic acids. 3,862,948, Cl. 260-256.40C.

Kimberly-Clark Corporation: *See*—
Hinsch, Kurt W., 3,862,632.

King, Karl Lewis; and Arrington, James R., to Great Lakes Instruments, Inc. Self-compensating electrode system. 3,862,895, Cl 204-195.00R.

King Radio Corporation: *See*—
Friday, Robert E., 3,863,053.
Lehfeldt, James J., 3,862,717.

King, Robert M.; and Worman, William E., to General Motors Corporation. Brake control proportioning system. 3,862,781, Cl. 303-22.00R.

Kirby, Peter; and Isaac, Eirlys R., to Shell Oil Company. Cyclic acetals of alpha-oxocarboxylic acid derivatives. 3,862,959, Cl. 260-340.900.

Kiyoto, Masami; and Anzai, Makoto, to Nissan Motor Company, Limited. Multiple frequency doppler radar system for vehicle passengers. 3,863,253, Cl. 343-9.000.

Klausner, Yakir: *See*—
Said, Sami I.; Bodanszky, Miklos; Mutt, Viktor; and Klausner, Yakir, 3,862,927.

Klebe, Elmer C., Jr.; and Looper, Timothy J., to Singer Company, The. Support assembly for a portable surface-treating machine. 3,862,520, Cl. 51-170.0MT.

Kleimann, Helmut: *See*—
Dietrich, Werner; Wagner, Kuno; Roegler, Manfred; Kleimann, Helmut; and Richert, Karl Hartwig, 3,862,973.

Klein, Enrique J., to Electroprint, Inc. Electrically addressed apertured modulator for electrostatic printing. 3,863,261, Cl. 346-74.0ES.

Klein, Robert Ivan, to Coulter Electronics, Inc. Method and apparatus for multichannel voting. 3,863,056, Cl. 235-151.300.

Kleinewefers Industrie Compania GmbH: *See*—
Schiffer, Gunter, 3,862,822.

Klimek, Boleslaw: *See*—
Horowitz, Charles F.; and Klimek, Boleslaw, 3,862,782.

Kliment, Karel: *See*—
Wichterle, Otto; Kliment, Karel; Vacik, Jiri; Ott, Zdenek; Stol, Miroslav; and Dvorak, Jan, 3,862,452.

Klinger, Roman, to International Standard Electric Corporation. Frequency synthesizer having phase-locked loop including sample and hold circuit frequency converter. 3,863,174, Cl. 331-2.000.

Klopfenstein, King L.: *See*—
Muskat, Robert L.; Connors, Robert H.; Klopfenstein, King L.; and Stachnik, Michael S., 3,862,666.

Klos, Ewald: *See—*
Stolting, Klaus; Zimmermann, Hans-Georg; and Klos, Ewald, 3,862,594.

Kloster, Kenneth D. Special arbor press tool. 3,862,483, Cl. 29-257.000.

Klucznik, Arthur P. Combination sine plate. 3,862,498, Cl. 33-174.00S.

Klumpp, Marlin K., to Sycor, Inc. Method and apparatus for inserting data records on magnetic tape. 3,863,265, Cl. 360-48.000.

Knapp, Edward J., Jr., to Chase-Shawmut Company, The. Time-lag cartridge fuse for D-C circuits. 3,863,188, Cl. 337-164.000.

Knapper, John. Transport mechanism for vertical venetian blinds and drapes. 3,862,655, Cl. 160-172.000.

Knell, Harvey A.: *See—*
Gill, Stephen H.; Knell, Harvey A.; and Tucker, Joseph M., III, 3,862,697.

Knight, Mark Berwyn, to RCA Corporation. Composite transistor circuit. 3,863,169, Cl. 330-22.000.

Kobayashi, Torao: *See—*
Mishima, Nobuo; Yamaguchi, Takeshi; Yoshizawa, Sozaburo; Kobayashi, Torao; and Yamade, Takashi, 3,863,137.

Koehler, Michael; Elghani, Salah Elabd; and Prinz, Richard, to Bayer Aktiengesellschaft. Mixture of a polycarbonate and a styrene maleic acid anhydride copolymer. 3,862,998, Cl. 260-873.000.

Koelichen, Harald, to Standardgraph Filler & Fiebig GmbH. Container for indian ink drawing devices. 3,862,683, Cl. 206-207.000.

Kogan, Petr Grigorievich: *See—*
Derzhavets, Abram Yakovlevich; Kogan, Petr Grigorievich; and Nunuparov, Sergei Martynovich, 3,862,902.

Kolarik, John P.; and Spector, George. Power saw utility case. 3,862,686, Cl. 206-349.000.

Kolle, Hans-Hermann: *See—*
Richter, Heinz; Kase, Walter; Kolle, Hans-Hermann; and Rothen, Johann, 3,862,559.

Komiya, Kenzi: *See—*
Shimizu, Katsumi; Kuroda, Tokiziro; and Komiya, Kenzi, 3,862,839.

Komp, Richard J., to Xerox Corporation. Method of cleaning an electrostatographic imaging surface. 3,862,801, Cl. 355-15.000.

Korell, Donald D.; and Wilcox, Gale F., to Steelcase, Inc. Suspended pedestal desk. 3,862,789, Cl. 312-194.000.

Kornblith, Jeffrey S.; and Swedlow, Jerold L., to United States of America, Navy. Light weight sabot. 3,862,603, Cl. 102-93.000.

Korobchansky, Ostap Alexandrovich: *See—*
Kovalenko, Leonid Maximovich; Tovazhnyansky, Leonid Leonidovich; Pertsev, Leonid Petrovich; Korobchansky, Ostap Alexandrovich; Chernonogov, Vladimir Sergeevich; and Sytnik, Vladimir Ilich, deceased, 3,862,661.

Kosonocky, Walter Frank; and Williams, Brown F., to RCA Corporation. Dynamic control of blooming in charge coupled, image-sensing arrays. 3,863,065, Cl. 250-211.00J.

Kosswig, Kurt: *See—*
Von Praun, Ferdinand; and Kosswig, Kurt, 3,862,983.

Kovac, Michael, to Illinois Tool Works, Inc. Sheet of elastic covers for containers. 3,862,614, Cl. 215-317.000.

Kovalenko, Leonid Maximovich; Tovazhnyansky, Leonid Leonidovich; Pertsev, Leonid Petrovich; Korobchansky, Ostap Alexandrovich; Chernonogov, Vladimir Sergeevich; and Sytnik, Vladimir Ilich, deceased (by Sytnik, Ljudmila Vladimirovna, administratrix). Corrugated plate for heat exchanger and heat exchanger with said corrugated plate. 3,862,661, Cl. 165-166.000.

Krahl, Burghard: *See—*
Tollrian, Herwig; and Krahl, Burghard, 3,863,125.

Kralove, Hradec: *See—*
Kramenic, Zdenek; Zabrodsky, Zdenek; Didkova, Juna; Kralove, Hradec; and Imramovsky, Rudolf, 3,862,649.

Kramenic, Zdenek; Zabrodsky, Zdenek; Didkova, Juna; Kralove, Hradec; and Imramovsky, Rudolf, to Vyzkummy Ustav Bavlnarsky. Covering band for weft inserter driving mechanism in multiple-shed weaving machines. 3,862,649, Cl. 139-12.000.

Kramer, Richard M.: *See—*
Vananrooy, John A.; and Kramer, Richard M., 3,862,674.

Kranz, Hans Werner; and Schultes, Max, to Siemens Aktiengesellschaft. Impulse transformer. 3,863,183, Cl. 336-96.000.

Kreitner, Charles A.; and Morgan, George H., to Lambert Brake Corporation. Disc brake. 3,863,038, Cl. 188-170.000.

Krickovich, Eli G. Roadway vacuum sweeper with slurry disposal. 3,862,467, Cl. 15-340.000.

Kruger, Johannes Petrus. Method of shaping ductile sheet material and apparatus therefor. 3,862,562, Cl. 72-380.000.

Krulik, Jarolsav: *See—*
Langr, Jaroslav; Lzicar, Josef; Mateju, Vladimir; and Krulik, Jarolsav, 3,862,648.

Kuchinsky, Saul; Wolfe, Roger Ward; Maloney, Thomas Christopher; and Hennessey, William Michael. Multiple character display device. 3,862,476, Cl. 29-25.160.

Kupersmith, Bertram F.; and Casper, Clarence, Jr., to United Aircraft Corporation. Synthetic phasor generator. 3,863,158, Cl. 328-14.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Suda, Hiroshi; and Matui, Hideo, 3,862,870.

Kurenkov, Gennady Fedorovich: *See—*
Grinshpun, Mark Izrailevich; Dobkin, Igor Iosifovich; Kurenkov, Gennady Fedorovich; and Bushev, Alexandr Vasilievich, 3,862,560.

Kuroda, Tokiziro: *See—*
Shimizu, Katsumi; Kuroda, Tokiziro; and Komiya, Kenzi, 3,862,839.

Kuromegawa, Toru, to Maruzen Sewing Machine Co., Ltd. Sewing machine needle. 3,862,611, Cl. 112-222.000.

Kuznetsov, Petr Ivanovich: *See—*
Vorms, Georgy Alfonsovich; Kuznetsov, Petr Ivanovich; and Volkov, Vladislav Borisovich, 3,862,821.

Labat, Yves: *See—*
Signouret, Jean-Baptiste; Labat, Yves; and Esclamadon, Christian, 3,862,922.

Labudda, Hans-Jurgen, to Licentia Patent-Verwaltungs-G.m.b.H. Circuit arrangement for producing a variable electron acceleration high voltage in an electron beam picture tube. 3,863,097, Cl. 315-21.00C.

Lace, Melvin A., to Motorola, Inc. One element voltage supply device. 3,863,138, Cl. 322-28.000.

Lackey, Daryl L.: *See—*
Bielski, Edward T.; Lackey, Daryl L.; and Theiss, Russell V., 3,862,887.

Ladany, Shaul P. Portable device for cooling liquids. 3,862,548, Cl. 62-294.000.

Laderoute, Maurice. Method for locating and supporting tendons in reinforced concrete structures. 3,862,479, Cl. 29-155.00R.

Lagen, William S. Apparatus for incinerating solid fuels containing carbonizable material. 3,862,608, Cl. 110-8.00C.

Lambert Brake Corporation: *See—*
Kreitner, Charles A.; and Morgan, George H., 3,863,038.
Vananrooy, John A.; and Kramer, Richard M., 3,862,674.

Lambrix, James R.: *See—*
Boyd, Harold B.; and Lambrix, James R., 3,862,898.

Lancini, Giancarlo: *See—*
Cricchio, Renato; and Lancini, Giancarlo, 3,862,934.

Lander, Emil; Yackel, Richard A.; and Singh, Gurdial, to Warner Electric Brake and Clutch Company. Closed-loop speed control for step motors. 3,863,118, Cl. 318-685.000.

Landrum, Ralph A., Jr., to Amoco Production Company. Earth vibrator tester. 3,863,202, Cl. 340-17.000.

Lane, George A.: *See—*
Flynn, James P.; Lane, George A.; and Plomer, John J., 3,862,864.

Lang, Stanley Albert, Jr.; Cohen, Elliott; and Sloboda, Adolph Edward, to American Cyanamid Company. Compositions of matter and method of use of phenyl and substituted phenyl tetrazines. 3,863,010, Cl. 424-244.000.

Langr, Jaroslav; Lzicar, Josef; Mateju, Vladimir; and Krulik, Jarolsav, to Vyzkumny Ustav Bavlnarsky. Weft thread clamp and cutter for travelling-wave shedding looms. 3,862,648, Cl. 139-12.000.

Lanham, Tony Edward: *See—*
Davies, Terrence Ardern; Garner, Geoffrey Michael; Hurditch, Rodney John; Lynch, James Thomas; Lanham, Tony Edward; and Fearnside, Kenneth, 3,862,790.

LaPointe, Gabriel M.; and Vecchione, John S., to Parker Manufacturing Co. Stapler. 3,862,712, Cl. 227-127.000.

Lapointe, Lloyd J., to Magsat Corporation. Magnetically operated electrical switch. 3,863,182, Cl. 335-207.000.

Larkin, C. Carroll: *See—*
Swinamer, Roy V.; and Larkin, C. Carroll, 3,863,245.

Larsen, Eric R.: *See—*
Edamura, Fred Y.; McKendry, Lennon H.; and Larsen, Eric R., 3,862,974.

Latham, Ernest W., to Bentson Industries, Inc. Safety stop lock. 3,862,772, Cl. 292-36.000.

Latham, Maxwell E., Jr. Device for warning of malfunctions of engine pressure systems and of itself. 3,863,211, Cl. 340-60.000.

Laurent, Serge; and Mallet, Maurice, to Rhone-Poulenc S.A. Mouldable compositions for articles which are resistant to shock and to wear at high temperature. 3,862,918, Cl. 260-37.00N.

Lautenschlager, Werner; Pahlke, Siegfried; and Tolg, Gunther, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e. V. Aluminium object with anodic oxide surface. 3,862,892, Cl. 204-58.000.

Lavanchy, Gerard: *See—*
Fellrath, Paul-Henri; and Lavanchy, Gerard, 3,863,148.

Lawrence Brothers Inc.: *See—*
Johnson, Larry K., 3,862,774.

Leach, Clifford Harvey: *See—*
Cebuliak, Steve E.; Leach, Clifford Harvey; and Westlake, John Henry, 3,863,150.

Lear Siegler, Inc.: *See—*
Mori, Jack K.; and Duly, Michael J., 3,862,691.

Lehfeldt, James J., to King Radio Corporation. Method and apparatus for automatically computing vertical track angle. 3,862,717, Cl. 235-150.220.

Lekim, Dac: *See—*
Betzing, Hans; and Lekim, Dac, 3,862,968.

Lemforder Metallwasen AG: *See—*
Doden, Hans-Jurgen; and Ulderup, Jurgen, 3,862,807.

Leonhard Herbert Maschinenfabrik: *See—*
Held, Gerhard; and Balle, Walter, 3,862,871.

Lerner, Harry, to Itek Corporation. Photographic element containing a layer of physical development nuclei less than two microns in thickness and a development activator. 3,862,843, Cl. 96-76.00R.

Lerner, Seymour D., to Sperry Rand Corporation. Doppler sonar utilizing period measurement with thresholded receivers. 3,863,198, Cl. 340-3.00D.

Leslie, Victor Jeffrey: *See—*
Newton, Alan Branford; Rose, John Brewster; and Leslie, Victor Jeffrey, 3,862,990.
Levedahl, William J.: *See—*
Jules, Edwin; and Levedahl, William J., 3,863,081.
Lever Brothers Company: *See—*
Heslinga, Lammert; Pabon, Hendrik Jacob Johannes; and van Dorp, David Adriaan, 3,862,972.
Lewis, B. Frank: *See—*
Weiler, Donald J.; Fritz, John H.; and Lewis, B. Frank, 3,862,656.
Libbey-Owens-Ford Company: *See—*
Ritter, George F., Jr.; and Rahrig, Donald D., 3,862,828.
Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Harth, Wolfgang, Dr.; and Muller, Jorg, 3,863,167.
Labudda, Hans-Jurgen, 3,863,097.
Lichtblau, George Jay. Electronic security system having improved noise discrimination. 3,863,244, Cl. 340-280.000.
Liedholz, Gerhard A., to Coulter Electronics, Inc. Voltage run-down circuit. 3,863,066, Cl. 250-214.00R.
Like, Burton M.: *See—*
Green, Harold A.; and Like, Burton M., 3,862,823.
Limbro Chemical Co., Inc.: *See—*
Gallant, Reginald R., 3,862,793.
Liner, John, 3,862,886.
Limburg, William W.: *See—*
Pilato, Louis A.; Cressman, Paul J.; and Limburg, William W., 3,862,841.
Lind, Paul U.: *See—*
Gonsewski, Leonard E.; and Lind, Paul U., 3,863,025.
Lindbert, Brook A.; McCollum, Wesley L.; and Mertz, Edward H., to General Motors Corporation. Occupant restraint system. 3,862,669, Cl. 180-91.000.
Liner, John, to Limbro Chemical Co., Inc. Sterile plate component package for culture growing apparatus. 3,862,886, Cl. 195-127.000.
Lion Fat & Oil Co.: *See—*
Hoshi, Hiroshi; Murakami, Keiichi; Maeda, Ichinari; and Susuki, Rinnosuke, 3,862,963.
Liou, Shu-Lien. Apparatus for controlling progress of a task. 3,862,615, Cl. 116-135.000.
Litchfield, Kenneth W., to GTE Automatic Electric Laboratories Incorporated. High speed loading of reedblades. 3,862,536, Cl. 53-246.000.
Litton Industrial Products, Inc.: *See—*
Rettig, Charles E., 3,863,120.
Rettig, Charles E., 3,863,121.
Rettig, Charles E., 3,863,122.
Litton Systems, Inc.: *See—*
Clark, William H., 3,863,258.
Livezey, William G.: *See—*
Harmon, Kenneth B.; Bowers, George L.; and Livezey, William G., 3,862,585.
Llauro, Daniel: *See—*
Demoures, Bernard; Llauro, Daniel; and Giolito, Francois, 3,862,981.
Lohbauer, Kenneth R.: *See—*
Bianchetta, Donald L.; and Lohbauer, Kenneth R., 3,862,645.
Lohrey, Fred H.: *See—*
Johnson, Darrel D.; Kaufman, Carl L.; Lohrey, Fred H.; and Robbins, Gordon J., 3,863,232.
Long, Robert S.: *See—*
McManus, Hugh D.; Wigal, Voorhis F.; and Long, Robert S., 3,862,865.
Longo, Joseph F., to International Dynetics Corporation. Movable vertical compactor. 3,862,595, Cl. 100-100.000.
Loomans, Bernard A., to Baker Perkins, Inc. Drive shaft construction for mixers and the like. 3,862,551, Cl. 64-19.000.
Looper, Timothy J.: *See—*
Klebe, Elmer C., Jr.; and Looper, Timothy J., 3,862,520.
Loran, Thomas J.: *See—*
Pardee, Robert P.; Bickling, Archie L., Jr.; and Loran, Thomas J., 3,862,860.
Lord Corporation: *See—*
Gorndt, John H.; Schmidt, Warren E.; and Peterson, Robert R., 3,862,812.
Loudin, Blaine H., to Vertical Company, The. Wire loop hanger for dunnage. 3,862,607, Cl. 105-486.000.
Loughlin, Joseph B. Foldable a-frame mobile home. 3,862,526, Cl. 52-70.000.
Lovell, Clarence A., to Lynch Communication Systems, Inc. Call concentrator switching matrix. 3,863,035, Cl. 179-18.0FC.
Lovell, Walter: *See—*
Grise, Frederick G. J.; and Lovell, Walter, 3,862,748.
Lowe, Earl F., Jr., to Interlake, Inc. Coke over charging system. 3,862,889, Cl. 202-263.000.
Lubs, Hans Joachim: *See—*
Kaiser, Fritz; Lubs, Hans Joachim; Schaumann, Wolfgang; and Voigtlander, Wolfgang, 3,862,931.
Lucas Electrical Company Limited, The: *See—*
Williams, Malcolm, 3,863,139.
Lucas, John C.; and Morland, George W. Measurement of the change in longitudinal force in a rail. 3,862,569, Cl. 73-88.50R.
Luedi, Hans R.: *See—*
Fencl, Vernon; Luedi, Hans R.; Stettler, Christian H.; and Roze, Alberts, 3,862,563.
Lumenite Electronic Company: *See—*
Calabrese, Ronald V., 3,863,079.
Lunsford, Carl Dalton; and Cale, Albert Duncan, Jr., to A. H. Robins Company, Incorporated. 2-(2-Aminoethyl) piperazines. 3,862,938, Cl. 260-247.50D.
Lussow, Robert O.: *See—*
Berkenblit, Melvin; Lussow, Robert O.; and Reisman, Arnold, 3,862,831.
Lynch Communication Systems, Inc.: *See—*
Lovell, Clarence A., 3,863,035.
Lynch, James Thomas: *See—*
Davies, Terrence Ardern; Garner, Geoffrey Michael; Hurditch, Rodney John; Lynch, James Thomas; Lanham, Tony Edward; and Fearnside, Kenneth, 3,862,790.
Lzicar, Josef: *See—*
Holub, Josef; Lzicar, Josef; Dubanek, Jan; and Stech, Jaroslav, 3,862,647.
Langr, Jaroslav; Lzicar, Josef; Mateju, Vladimir; and Krulik, Jaroslav, 3,862,648.
Mace, Harry W.; and Presant, Fred, to Aerosol Techniques Incorporated. Dual astringent composition. 3,863,005, Cl. 424-45.000.
Machlett Laboratories, Incorporated, The: *See—*
Wagner, Howard G., 3,863,073.
Maeda, Ichinari: *See—*
Hoshi, Hiroshi; Murakami, Keiichi; Maeda, Ichinari; and Susuki, Rinnosuke, 3,862,963.
Magnavox Company, The: *See—*
Kent, George A., 3,863,175.
Magsat Corporation: *See—*
Lapointe, Lloyd J., 3,863,182.
Mahieu, William R.; Tackaberry, Robert S.; and Chance, Philip G., to A. B. Chance Company. Total range fault interrupter. 3,863,187, Cl. 337-162.000.
Majik-Ironers, Inc.: *See—*
Foster, Edwin E.; Foster, Wilbur A.; and Foster, Thomas E., 3,862,503.
Mallet, Maurice: *See—*
Gattus, Jean; and Mallet, Maurice, 3,862,897.
Laurent, Serge; and Mallet, Maurice, 3,862,918.
Mallinckroft Chemical Works: *See—*
Wolfangel, Robert G., 3,863,004.
Mallonen, Edward A., to Cutler-Hammer, Inc. Three phase remote control circuit breaker. 3,863,186, Cl. 337-99.000.
Maloney, Thomas Christopher: *See—*
Kuchinsky, Saul; Wolfe, Roger Ward; Maloney, Thomas Christopher; and Hennessey, William Michael, 3,862,476.
Malpass, Robert C.: *See—*
Illman, Walter F.; Malpass, Robert C.; and Conklin, Delano M., 3,862,475.
Manigault, Edward L., to Chas. Taylor's Sons Company, The. Alumina refractories having a permanent expansion upon heating. 3,862,845, Cl. 106-59.000.
Manning, Larry G., to United States of America, Navy. Contact delay and self-destruct circuit. 3,862,602, Cl. 102-70.20R.
Marchiano, Anthony Rosario: *See—*
Johnson, Donald Owen; and Marchiano, Anthony Rosario, 3,862,702.
Markert, William O. Wallpaper cutting guide. 3,862,495, Cl. 30-294.000.
Markley, Lowell D., to Dow Chemical Company, The. Method for preparing 3,5,6-trichloro-2-pyridyloxyacetic acid. 3,862,952, Cl. 260-295.00R.
Markos, Peter. Ridge cap. 3,862,529, Cl. 52-199.000.
Markos, Peter. Roof tile. 3,862,532, Cl. 52-521.000.
Marley, Brian George, to Research Laboratories of Australia Pty. Limited. Transfer of color images. 3,862,848, Cl. 117-37.0LE.
Marshall, Preston F., to Kendall Company, The. Process for producing reinforced nonwoven fabrics. 3,862,867, Cl. 156-62.200.
Martens, Guy; and Godfroid, Marcel, to Solvay & Cie. Manufacture of 1,1-difluoroethane. 3,862,995, Cl. 200-653.600.
Martin, Alfred, to Franz Buettner AG. Casing for inking rollers. 3,862,597, Cl. 101-367.000.
Martin, Roger C., to Griffis, Edgar E., a part interesst. Viscera separator. 3,862,471, Cl. 17-45.000.
Martine, Walter I., to Uni Wall Industries, Inc. Mounting means for wall panels. 3,862,530, Cl. 52-281.000.
Martinez, John S.; Ogren, John R.; and Rutkowski, Eugene V., to TRW Inc. Portable chemical laser. 3,863,176, Cl. 331-94.50P.
Martyn, Emerson F. Fish bait holder. 3,862,507, Cl. 43-4.000.
Martzloff, Francois D., to General Electric Company. Polycrystalline varistor surge protective device for high frequency applications. 3,863,111, Cl. 317-61.500.
Maruzen Sewing Machine Co., Ltd.: *See—*
Kuromegawa, Toru, 3,862,611.
Marvin Glass & Associates: *See—*
Isaacson, Anson; and Meyer, Burton C., 3,862,513.
Marwell, Edward M.; and Finger, Eugene P., to Curtis Instruments, Inc. Switched integrator. 3,863,154, Cl. 324-182.000.
Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,862,882, Cl. 161-170.000.
Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft Werk Nurnberg: *See—*
Schluter, Heinz, 3,862,578.
Mase, Toshio, to Kabushiki-Kaisha Tokai-Rika-Denki-Seisakusho. Electric cigarette lighter. 3,863,047, Cl. 219-265.000.
Massa Corporation: *See—*
Hilles, Lewis M., 3,863,196.

Massonne, Joachim: *See—*
Rudolph, Werner; Massonne, Joachim; and Fazniewscy, Karl-Heinz, 3,862,971.
Matejcic, Leonard S.: *See—*
Fisher, Robert E.; and Matejcic, Leonard S., 3,862,456.
Mateju, Vladimir: *See—*
Langr, Jaroslav; Lzicar, Josef; Mateju, Vladimir; and Krulik, Jaroslav, 3,862,648.
Material Control, Inc.: *See—*
Reiter, Robert C., 3,862,462.
Reiter, Robert C., 3,862,463.
Reiter, Robert C., 3,862,707.
Mathieu, Jean-Jacques: *See—*
Antoine, Jacques; and Mathieu, Jean-Jacques, 3,862,574.
Matsumoto, Seiji: *See—*
Fukushima, Osamu; Sato, Masamichi; and Matsumoto, Seiji, 3,862,619.
Matsushita Electric Industrial Co., Ltd.: *See—*
Akamine, Takenori, 3,863,269.
Matsuura, Mikio; Iga, Atsushi; and Wakahata, Yasuo, 3,863,193.
Yasukatsu, Fujinaka, 3,863,267.
Matsuura, Mikio; Iga, Atsushi; and Wakahata, Yasuo, to Matsushita Electric Industrial Co., Ltd. Voltage-nonlinear resistors. 3,863,193, Cl. 338-20.000.
Matui, Hideo: *See—*
Suda, Hiroshi; and Matui, Hideo, 3,862,870.
Maurin, Jean: *See—*
Weisang, Joseph-Edouard; Szabo, Georges; and Maurin, Jean, 3,862,964.
Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e. V.: *See—*
Lautenschlager, Werner; Pahlke, Siegfried; and Tolg, Gunther, 3,862,892.
Poschenrieder, Walter P., 3,863,068.
Mayer & Phelps Limited: *See—*
Austin, Roger Tilston, 3,862,631.
Mazzucconi, Vittorio, to ICF De Padova S.r.l. Divan having adjustable catenary and horizontal layout positions. 3,862,454, Cl. 5-47.000.
McAfee, Richard C.: *See—*
Anderson, Ronald W.; and McAfee, Richard C., 3,862,914.
McArdle, Edward John, to Illinois Tool Works, Inc. Method and machine for applying pour spouts to containers. 3,862,486, Cl. 29-208.00B.
McCauley, Harvey Wayne: *See—*
McCauley, Willard Mack; and McCauley, Harvey Wayne, 3,862,696.
McCauley, Willard Mack; and McCauley, Harvey Wayne. Tire carrier. 3,862,696, Cl. 214-454.000.
McClelland, Donald H.; and Devitt, John L., to Gates Rubber Company, The. Maintenance-free type lead acid. 3,862,861, Cl. 136-26.000.
McCluskey, Arthur, Jr. Glass breakage detector. 3,863,250, Cl. 340-274.000.
McColloch, Thomas R.: *See—*
Pierce, Ernest E.; and McColloch, Thomas R., 3,863,124.
McCollum, Wesley L.: *See—*
Lindbert, Brook A.; McCollum, Wesley L.; and Mertz, Edward H., 3,862,669.
McCormick, Maurice D., to GTE Automatic Electric Laboratories Incorporated. Open contact matrix switch. 3,863,044, Cl. 200-175.000.
McCrackin, Lonnie L., to Steelcase, Inc. Hanger system for partitions. 3,862,524, Cl. 52-36.000.
McCrea, Donald H.: *See—*
Field, Joseph H.; and McCrea, Donald H., 3,863,003.
Mc Crudden, John Anthony, to Bell-Northern Research Ltd. Telephone subscriber loop ground current detection circuit. 3,863,036, Cl. 179-17.00A.
McDonnell Douglas Corporation: *See—*
McIntyre, Robert G., 3,862,731.
McEachron, John C.: *See—*
Schindler, Edgar C.; and McEachron, John C., 3,863,021.
Schindler, Edgar C.; and McEachron, John C., 3,863,037.
McGraw-Edison Company: *See—*
Kelly, Robert W.; and Hassler, Stephen P., 3,863,145.
Urami, Angelo, 3,863,190.
Urani, Angelo, 3,863,189.
McGraw-Hill, Inc.: *See—*
Smith, Elliott P.; and Wachsmuth, Robert H. (said Elliott P. Smith assors. to), 3,862,799.
McGrogan, Ellwood Patrick, Jr., to RCA Corporation. Detector for repetitive digital codes. 3,863,215, Cl. 340-146.1BA.
McGuckin, Hugh Gerald, to Eastman Kodak Company. Photographic receiver elements containing a cobalt(III) ion complex. 3,862,855, Cl. 117-161.0LN.
McGuire, Kathleen A.; Hansen, Charles M.; and Christenson, Roger M., to PPG Industries, Inc. A method of electrodepositing nonaqueous cationic dispersions and articles produced thereby. 3,862,894, Cl. 204-181.000.
McIntyre, Robert G., to McDonnell Douglas Corporation. Zero-delay speed/altitude controlled ejection seat. 3,862,731, Cl. 244-141.000.
McKee, Donald Eugene; and Rau, James Edward, to Rockwell International Corporation. Phase sensitive position pickoff device. 3,863,235, Cl. 340-195.000.
McKendry, Lennon H.: *See—*
Edamura, Fred Y.; McKendry, Lennon H.; and Larsen, Eric R., 3,862,974.
McKinley, Wayne A.: *See—*
Sarantakis, Dimitrios; and McKinley, Wayne A., 3,862,925.
McKinnon, Matthew C.: *See—*
Roland, James P.; and McKinnon, Matthew C., 3,863,210.
McLamb, Jessie Robert. Hand hurling object, target base and target. 3,862,758, Cl. 273-95.00R.
McManus, Hugh D.; Wigal, Voorhis F.; and Long, Robert S., to Kilgore Corporation. Sparkler composition. 3,862,865, Cl. 149-19.910.
McNeil Corporation: *See—*
Callahan, James J.; and Snow, John Procter, 3,862,544.
Measurement Systems, Inc.: *See—*
Mehr, Morton H., 3,863,098.
Medio, Grace E.: *See—*
Green, Cyril Robert, 3,862,482.
Medio, Mario D.: *See—*
Green, Cyril Robert, 3,862,482.
Mednick, Edward, to Fiber Bond Corporation. Needled scouring pad. 3,862,522, Cl. 51-400.000.
Meeker, George William, to United States of America, Navy. Efficient dc/dc converter for a solid state fuze. 3,863,132, Cl. 321-2.000.
Mehr, Morton H., to Measurement Systems, Inc. Two-axis positioning control. 3,863,098, Cl. 315-26.000.
Meilander, Willard C.: *See—*
Eddey, Everett E.; Favor, James N.; and Meilander, Willard C., 3,863,233.
Meissinger, Hans F., to TRW Inc. Deployable boom. 3,862,528, Cl. 52-108.000.
Mengeler, Hermann. Expansion engine and injection-chamber head. 3,862,590, Cl. 92-163.000.
Merck & Co., Inc.: *See—*
Fisher, Michael H.; Smith, George B.; and Hoff, Dale R., 3,863,012.
Mertz, Edward H.: *See—*
Lindbert, Brook A.; McCollum, Wesley L.; and Mertz, Edward H., 3,862,669.
Metherell, Alexander F., to Action Industries, Inc. Hologram having equal intensity for spaced apart objects. 3,863,197, Cl. 340-1.00R.
Meyer, Burton C.: *See—*
Isaacson, Anson; and Meyer, Burton C., 3,862,513.
Michels, Albertus Peter Johannes, to U.S. Philips Corporation. Hot-gas engine burner-heater. 3,862,542, Cl. 60-517.000.
Micro Science Associates: *See—*
Uchytil, Gary, 3,862,875.
Miczek, Gerhard. West dust collector with concurrent flow contacting chamber. 3,862,827, Cl. 55-238.000.
Mila, Truman R., to GTE Automatic Electric Laboratories Incorporated. Arrangement and method for assuring the vacidity of transferred data. 3,863,216, Cl. 340-146.10R.
Miles Laboratories, Inc.: *See—*
Havera, Herbert John, 3,862,946.
Miller, Charles Eveleigh: *See—*
Schlatter, Gerald Lance; and Miller, Charles Eveleigh, 3,862,568.
Miller, Hugh Laurence, to Northern Electric Company Limited. Terminal pin block and method of making it. 3,862,791, Cl. 339-198.00R.
Miller, James Willard, to Amoco Production Company. Built-in seismometer amplifier. 3,863,200, Cl. 340-15.5GC.
Miller, Paul W., to Wean United Inc. Coil forming apparatus. 3,862,728, Cl. 242-158.00R.
Miller, Roy H.; Boyer, Charles J.; and Bohner, William R., to ESB Incorporated. Hearing protector mounting. 3,862,451, Cl. 2-209.000.
Millies, Clarence Frederick; and Hughes, Loren Vance. Adaptor system for a vending machine to adapt it to the vending of various size articles. 3,862,704, Cl. 221-242.000.
Millmaster Onyx Corporation: *See—*
Green, Harold A.; and Like, Burton M., 3,862,823.
Mills, Jeffrey P., to GTE Automatic Electric Laboratories Incorporated. Pcm tone receiver using digital spectrum analysis. 3,863,030, Cl. 179-15.0BY.
Millsap, Norman E., to Parken-Hannifin Corporation. Seal for drill bit bearings. 3,862,762, Cl. 277-92.000.
Minnesota Mining and Manufacturing Company: *See—*
Giorgini, Norman L., 3,862,753.
Hansen, Robert L., 3,862,989.
Wirth, Wayne M., 3,862,555.
Minolta Camera Kabushiki Kaisha: *See—*
Uesugi, Kyozo, 3,862,797.
Minton, James W. Electric screen protection. 3,863,242, Cl. 340-273.000.
Miscellaneous Manufacturing Corporation: *See—*
Attaway, Julian J.; and Driggers, Randolph W., 3,862,531.
Mishima, Nobuo; Yamaguchi, Takeshi; Yoshizawa, Sozaburo; Kobayashi, Torao; and Yamade, Takashi, to Hitachi, Ltd. Exciting system for alternator. 3,863,137, Cl. 322-25.000.
Mitchell, Albertha B.; Moppett, Charles E.; and Brady, Thomas P., to Dow Chemical Company, The. Preparation of carboxylate and sulfonate salts of 1-cis-(3-chloro-2-propenyl)-3,5,7-triaza-1-azoniatricyclo(3.3.1.13,7)decane. 3,862,940, Cl. 260-248.0NS.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Yoshitani, Yutaka; and Hamazaki, Yoshiharu, 3,862,558.
Mitsubishi Petrochemical Company Limited: *See—*
Taniguchi, Takashi; Abe, Kunihiro; and Sugimoto, Takashi, 3,862,881.

Mitsui Mining and Smelting Co., Ltd.: *See—*
Shimizu, Katsumi; Kuroda, Tokiziro; and Komiya, Kenzi, 3,862,839.

Mittermeier, Manfred: *See—*
Nitzsche, Siegfried; Hittmair, Paul; Hechtl, Wolfgang; Wohlfarth, Ernst; and Mittermeier, Manfred, 3,862,919.

Miyabayashi, Yoshiyuki: *See—*
Tsuneishi, Norihiro; Miyabayashi, Yoshiyuki; Aida, Hiroyuki; and Takizawa, Hideo, 3,862,490.

Mobil Oil Corporation: *See—*
Anderson, Ronald W.; and McAfee, Richard C., 3,862,914.
Patton, Bobbie J.; Sexton, James H.; and Harrell, John W., 3,863,203.

Mobley, Loreley S.: *See—*
Fieser, Arthur H.; Anderson, Charles H.; and Mobley, Loreley S., 3,862,749.

Modern Album and Finishing Co., Inc.: *See—*
Froehlig, Rudolph A., 3,862,713.

Moeller, Rolf: *See—*
Fried, Michael; Moeller, Rolf; Zuern, Ludwig; and Stahnecker, Erhard, 3,862,915.

Mogensen, Palne; Smars, Erik; and Kaij, Mats J., to AGA Aktiebolag. Method and device for the striking of an arc in a reactor. 3,863,107, Cl. 315-336.000.

Molybdenum Corporation of America: *See—*
Kentro, Dan M.; and Cole, James W., 3,862,836.

Monpetit, Louis A., to Societe des Procedes Modernes D'Injection Sopromi. Electronic computer for a system of fuel injection for combustion engines. 3,863,054, Cl. 235-150.210.

Monsanto Company: *See—*
Mottus, Edward H., 3,863,014.
Semon, Warren L.; and Rudolph, Luther D., 3,863,234.

Monsanto Enviro-Chem Systems, Inc.: *See—*
Bielski, Edward T.; Lackey, Daryl L.; and Theiss, Russell V., 3,862,887.

Moore, Carl: *See—*
Decker, Dalton L.; Moore, Carl; and Tousignant, William F., 3,862,978.

Moppett, Charles E.: *See—*
Mitchell, Albertha B.; Moppett, Charles E.; and Brady, Thomas P., 3,862,940.

Morales, David Ocampo. Current controlling device. 3,863,046, Cl. 219-132.000.

Morgan, George H.: *See—*
Graafsma, Richard S.; and Morgan, George H., 3,862,577.
Kreitner, Charles A.; and Morgan, George H., 3,863,038.

Morgan, John C. Fishing pole holder. 3,862,508, Cl. 43-17.000.

Mori, Jack K.; and Duly, Michael J., to Lear Siegler, Inc. Lock span shelving. 3,862,691, Cl. 211-176.000.

Mori, Masami: *See—*
Hanamura, Tomoaki; Ijiri, Ryuzo; and Mori, Masami, 3,862,962.

Mori, Toshihiro; Yamada, Takeo; and Watanabe, Katsujiro, to Nippon Kokan Kabushiki Kaisha. Method and apparatus for measuring temperature difference at spaced points on metal surfaces. 3,862,573, Cl. 73-342.000.

Mori, Toshihiro; and Ando, Seigo, to Nippon Kokan Kabushiki Kaisha. Frequency analyzing apparatus for use with an eddy current detector. 3,863,141, Cl. 324-37.000.

Morland, George W.: *See—*
Lucas, John C.; and Morland, George W., 3,862,569.

Morris, Charles W., to Bendix Corporation, The. Centering device with an improved ball retainer arrangement. 3,862,783, Cl. 308-196.000.

Morrison, Ralph, to Communication Mfg. Co. Translator alarm. 3,863,034, Cl. 179-18.0ET.

Morrison, Ralph: *See—*
O'Dea, Orrin B.; Arce, Luis A.; and Morrison, Ralph, 3,863,032.

Morton-Norwich Products, Inc.: *See—*
Booth, David L., 3,862,976.
Schwan, Thomas J., 3,862,945.

Moses, Adolph. Door lock attachment. 3,862,556, Cl. 70-416.000.

Mosetich, Joseph: *See—*
Mosetich, Ronald J.; and Mosetich, Joseph, 3,862,685.

Mosetich, Ronald J.; and Mosetich, Joseph, to Duo-Fast Corporation. Flexible nail strip. 3,862,685, Cl. 206-344.000.

Motorola, Inc.: *See—*
Lace, Melvin A., 3,863,138.
Olah, Emery E., 3,863,249.

Mottus, Edward H., to Monsanto Company. High acrylonitrile terpolymer containers and packages. 3,863,014, Cl. 426-106.000.

Motz, Kaye L.: *See—*
Yates, James E.; and Motz, Kaye L., 3,862,993.

Muir, Malcolm D., to United States of America, Air Force. Chopper transistor driver and feedback circuit for regulated dc to dc power converters using separate input and output grounds. 3,863,131, Cl. 321-2.000.

Mullenbach, Guy Towns: *See—*
Urry, Wilbert Herbert; and Mullenbach, Guy Towns, 3,862,980.

Muller, Jorg: *See—*
Harth, Wolfgang, Dr.; and Muller, Jorg, 3,863,167.

Muller, Karl A. Ball mill for treating used casting sand. 3,862,719, Cl. 241-74.000.

Murakami, Keiichi: *See—*
Hoshi, Hiroshi; Murakami, Keiichi; Maeda, Ichinari; and Susuki, Rinnosuke, 3,862,963.

Murley, Ellsworth M.: *See—*
Schmersal, Larry J.; Baker, Theodore C.; and Murley, Ellsworth M., 3,863,023.

Murphy, James R.; and Schneider, Leland W., to Pullman Incorporated. Process for the production of synthesis gas and clean fuels. 3,862,899, Cl. 208-93.000.

Muskat, Robert L.; Connors, Robert H.; Klopfenstein, King L.; and Stachnik, Michael S., to Triangle Package Machinery Company. Servo control system for filling machine weight setting. 3,862,666, Cl. 177-50.000.

Mussinan, Cynthia: *See—*
Wilson, Richard A.; Mussinan, Cynthia; Katz, Ira; Giacino, Christopher; Sanderson, Anne; and Shuster, Edward J., 3,863,013.

Mutt, Viktor: *See—*
Said, Sami I.; Bodanszky, Miklos; Mutt, Viktor; and Klausner, Yakir, 3,862,927.

Nagao, Osamu: *See—*
Noma, Tetsuo; Nagao, Osamu; and Okano, Ichizu, 3,862,700.

Nakae, Hiroyuki: *See—*
Kasai, Akira; Inui, Mitsuo; Hoshino, Nobuo; Hattori, Kenichi; Shiina, Naonori; and Nakae, Hiroyuki, 3,863,000.

Nakagawa, Kazuyoshi: *See—*
Kamiyamaguchi, Masaru; Nakagawa, Kazuyoshi; and Nishimura, Masana, 3,863,241.

Nakagiri, Yoshitaka: *See—*
Kano, Kunio; Kayama, Naohiro; Terashima, Hiroshi; and Nakagiri, Yoshitaka, 3,862,885.

National Research Development Corporation: *See—*
Taylor, Wilfred Kenelm, 3,863,231.

Nattermann, A. & Cie GmbH: *See—*
Betzing, Hans; and Lekim, Dac, 3,862,968.

Nayar, Harbhajan S., to Airco, Inc. Process for manufacture of hard and non-deformable alloys without compacting by sintering in the solid-liquid phase. 3,862,840, Cl. 75-200.000.

NCR Corporation: *See—*
Pierce, Ernest E.; and McColloch, Thomas R., 3,863,124.

Neel, Jean: *See—*
Chambon, Maurice; and Neel, Jean, 3,862,906.

Nehrig, R. Harlan: *See—*
Graafsma, Richard S.; Nehrig, R. Harlan; and White, Nicholas J., 3,862,743.

Nelco Corporation: *See—*
Schindler, Edgar C.; and McEachron, John C., 3,863,021.
Schindler, Edgar C.; and McEachron, John C., 3,863,037.

Nelson, Larry A.; and Crosby, Philip Stephen, to Tektronix, Inc. Sequential color and memory decoder. 3,863,264, Cl. 358-11.000.

Newberger, Judah. Method for Drawing. 3,862,847, Cl. 117-8.000.

Newton, Alan Branford; Rose, John Brewster; and Leslie, Victor Jeffrey, to Imperial Chemical Industries Limited. Biphenyl sulfones. 3,862,990, Cl. 260-607.00A.

Nick, Howard H.: *See—*
Caragliano, Edward S.; and Nick, Howard H., 3,863,024.

Nicol, Ronald, to Heinemann Electric Company. Circuit breaker with electrical and mechanical trip indication. 3,863,042, Cl. 200-153.00T.

Nier, Richard E.: *See—*
Kazantzis, George B.; and Nier, Richard E., 3,863,061.

Nihon Denshi Kabushiki Kaisha: *See—*
Shirota, Kohei, 3,863,069.

Nintendo Co., Ltd.: *See—*
Ueda, Minoru, 3,862,514.

Nippon Kokan Kabushiki Kaisha: *See—*
Mori, Toshihiro; Yamada, Takeo; and Watanabe, Katsujiro, 3,862,573.
Mori, Toshihiro; and Ando, Seigo, 3,863,141.
Shimotsuma, Teruo; Sano, Kazuo; and Fukuda, Yutaka, 3,862,907.

Nippon Steel Corporation: *See—*
Yoshitani, Yutaka; and Hamazaki, Yoshiharu, 3,862,558.

Nippondenso Co., Ltd.: *See—*
Kawashima, Yoshichi, 3,863,171.

Nishimura, Masana: *See—*
Kamiyamaguchi, Masaru; Nakagawa, Kazuyoshi; and Nishimura, Masana, 3,863,241.

Nissan Motor Company, Limited: *See—*
Kiyoto, Masami; and Anzai, Makoto, 3,863,253.
Tsuneishi, Norihiro; Miyabayashi, Yoshiyuki; Aida, Hiroyuki; and Takizawa, Hideo, 3,862,490.

Nisshin Oil Mills, Ltd., The: *See—*
Kanda, Hiroshi, 3,863,015.
Yamakami, Yasumasa, 3,863,016.

Nitzsche, Siegfried; Hittmair, Paul; Hechtl, Wolfgang; Wohlfarth, Ernst; and Mittermeier, Manfred, to Wacker-Chemie GmbH. Organopolysiloxane compositions having resilient properties. 3,862,919, Cl. 260-18.00S.

Nixdorf Computer AG: *See—*
Preiss, Gunter, 3,863,225.

Nockleby, Raymond B. Pipe wrench. 3,862,582, Cl. 81-168.000.

Noma, Tetsuo; Nagao, Osamu; and Okano, Ichizu, to Hitachi Shipbuilding and Engineering Company, Ltd. Low temperature liquified gas storage tank. 3,862,700, Cl. 220-15.000.

Noranda Mines Limited: *See—*
Gervais, Edouard; and Chollet, Pierre, 3,862,863.

Norris, Orlin R. Gauge glass protecting means. 3,862,572, Cl. 73-328.000.

North American Philips Corporation: *See—*
Daniels, Alexander, 3,862,546.

Northern Electric Company Limited: *See—*
Miller, Hugh Laurence, 3,862,791.

Norton, Henry J.; and Boehmer, Brian E., to Scott Paper Company. Method for forming a low basis weight non-woven fibrous web. 3,862,472, Cl. 19-145.500.

Noumi, Makoto: *See—*
Seki, Susumu; Noumi, Makoto; Takaoka, Tadashi; and Toriyama, Hisao, 3,863,059.

Nu-Look Fashions, Inc.: *See—*
Fannin, Larry L., 3,862,638.

Nunnink, Leonard I., Jr.: *See—*
Bivona, Leonard P.; Nunnink, Leonard I., Jr.; and Seek, Robert L., 3,862,710.

Nunuparov, Sergei Martynovich: *See—*
Derzhavets, Abram Yakovlevich; Kogan, Petr Grigorievich; and Nunuparov, Sergei Martynovich, 3,862,902.

Nupro Company: *See—*
Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; Cunningham, Frank M.; and Danko, Oliver L., 3,862,740.

Nyc, Wladimir. Thief alarm for a vehicle or the like. 3,863,212, Cl. 340-64.000.

Oak Industries Inc.: *See—*
Van Benschoten, Peter J.; and Kilsdonk, Jan Albert, 3,863,040.

O'Dea, Orrin B.; Arce, Luis A.; and Morrison, Ralph, to Communication Mfg. Co. Translator alarm. 3,863,032, Cl. 179-18.0ET.

Ogden, John F. Extruded diving board. 3,862,755, Cl. 272-66.000.

Ogren, John R.: *See—*
Martinez, John S.; Ogren, John R.; and Rutkowski, Eugene V., 3,863,176.

O'Hanlon, John F.; and Pennebaker, William B., to International Business Machines Corporation. Low temperature plasma anodization apparatus. 3,863,074, Cl. 250-542.000.

Ohtaka, Tadashi: *See—*
Tonomura, Akira; and Ohtaka, Tadashi, 3,863,095.

Oka, Mitsunori; Yamamoto, Shinji; and Kadota, Shozo, to Hitachi, Ltd. Pattern feature detection system. 3,863,218, Cl. 340-146.3AE.

Okano, Ichizu: *See—*
Noma, Tetsuo; Nagao, Osamu; and Okano, Ichizu, 3,862,700.

Olah, Emery E., to Motorola, Inc. Magnetic fluid display device. 3,863,249, Cl. 340-373.000.

Olin Corporation: *See—*
Babiec, John S., Jr., 3,862,992.

Olsen, Charles R., to Colt Industries, Operating Corporation. Cased cartridge. 3,862,599, Cl. 102-38.000.

Olympus Optical Co., Ltd.: *See—*
Fujii, Toru, 3,862,794.

O'Malley, John J., to General Motors Corporation. Four speed transmission. 3,862,581, Cl. 74-759.000.

Omodei-Sale, Amedeo, to Gruppo Lepetit S.p.A. 1,3,5-Substituted-1,2,4-triazoles and their preparation. 3,862,954, Cl. 260-296.00R.

Ongaro Dynamics: *See—*
Ongaro, Theodore, 3,862,570.

Ongaro, Theodore, to Ongaro Dynamics. Tire symmetry measuring method and system. 3,862,570, Cl. 73-146.000.

Onikubo, Kazutoshi: *See—*
Yamaoka, Goichi; and Onikubo, Kazutoshi, 3,863,130.

Ono Pharmaceutical Co., Ltd.: *See—*
Kano, Kunio; Kayama, Naohiro; Terashima, Hiroshi; and Nakagiri, Yoshitaka, 3,862,885.

Orthuber, Richard K., to International Telephone and Telegraph Corporation. Image intensifier and method of making an electron multiplier therefor. 3,863,094, Cl. 315-12.000.

Orthuber, Richard Kaspar, to International Telephone and Telegraph Corporation. Multicolor direct view device. 3,863,093, Cl. 315-12.000.

Osawa, Akira; and Yasuda, Hajime, to Hitachi, Ltd. Loop type data highway system for data transmission. 3,863,220, Cl. 340-147.0LP.

Otani, Kokichi. Process of reforming metal material. 3,862,837, Cl. 75-96.000.

Ott, Zdenek: *See—*
Wichterle, Otto; Kliment, Karel; Vacik, Jiri; Ott, Zdenek; Stol, Miroslav; and Dvorak, Jan, 3,862,452.

Owen, Frank S.: *See—*
Eckbreth, Alan C.; and Owen, Frank S., 3,863,103.

Owens, Abner, Jr., to Bendix Corporation, The. Electromagnetic deflection display system including dual mode deflection amplifiers and output power limited power supplies. 3,863,099, Cl. 315-27.0TD.

Owens-Corning Fiberglas Corporation: *See—*
Benson, Gustav E., 3,862,853.
Marzocchi, Alfred, 3,862,882.

Owens-Illinois, Inc.: *See—*
Bauer, Paul, Jr., 3,863,110.
Ernsthausen, Roger E.; and Byrum, Bernard W., Jr., 3,863,089.
Johnson, John R., 3,862,680.
Johnson, John R.; and Ashcroft, Richard I., 3,862,724.
Schmersal, Larry J.; Baker, Theodore C.; and Murley, Ellsworth M., 3,863,023.

Ozimek, Chester E.; and Eldridge, Kenneth L., Jr., to Sears, Roebuck and Co. Power operated typewriter with means for error correction. 3,862,679, Cl. 197-181.000.

Pabon, Hendrik Jacob Johannes: *See—*
Heslinga, Lammert; Pabon, Hendrik Jacob Johannes; and van Dorp, David Adriaan, 3,862,972.

Pace, Gerald F.; and Shortridge, Earl W., to Continental Oil Company. Static leaching process. 3,863,002, Cl. 423-20.000.

Packard, Norman M.; and Gaines, John W., to International Harvester Company. Ring manufacture, productive of face contact seal. 3,862,480, Cl. 29-156.40R.

Pahlke, Siegfried: *See—*
Lautenschlager, Werner; Pahlke, Siegfried; and Tolg, Gunther, 3,862,892.

Paper Converting Machine Company: *See—*
Small, Rudolph E., 3,862,634.

Pardee, Robert P.; Bickling, Archie L., Jr.; and Loran, Thomas J., to Ball Brothers Research Corporation. Method and composition for lubricating and lubricated substrates. 3,862,860, Cl. 117-239.000.

Parken-Hannifin Corporation: *See—*
Millsap, Norman E., 3,862,762.

Parker-Hannifin Corporation: *See—*
Tarsha, Manuel A., 3,862,646.
Zajac, Theodore S.; and George, Hal E., 3,862,587.

Parker Manufacturing Co.: *See—*
LaPointe, Gabriel M.; and Vecchione, John S., 3,862,712.

Parr, Bud. Step structure. 3,862,671, Cl. 182-132.000.

Parson, Ronald F., to Graco Inc. High voltage generator. 3,863,180, Cl. 321-117.00R.

Paschetto, Edward J., to Electronic Associates Inc. Plural motor tensioning system for rewinding tape cassettes. 3,863,117, Cl. 318-7.000.

Patry, Eric: *See—*
Godard, Pierre; and Patry, Eric, 3,863,123.

Patterson, James A. Metal springboard. 3,862,754, Cl. 272-66.000.

Patton, Bobbie J.; Sexton, James H.; and Harrell, John W., to Mobil Oil Corporation. Method and apparatus for controlling the data rate of a downhole acoustic transmitter in a logging-while-drilling system. 3,863,203, Cl. 340-18.0LD.

Pelabon, Andre E., to ANF Frangeco S.A. Locomotive engine compartment. 3,862,604, Cl. 105-61.500.

Pennebaker, William B.: *See—*
O'Hanlon, John F.; and Pennebaker, William B., 3,863,074.

Pennebaker, William Boone, Jr., to International Business Machines Corporation. Low voltage gas discharge display structures for improved addressing. 3,863,090, Cl. 313-217.000.

Pennwalt Corporation: *See—*
Shetty, Bola Vithal, 3,862,949.

Peppler, William S.; Keen, Everett M.; Siciliano, Anthony J.; and Baker, Graham, to Diamond International Corporation. Poultry watering cup. 3,862,621, Cl. 119-75.000.

Perini, Anthony C. Marine propeller shaft and key. 3,862,808, Cl. 403-318.000.

Pertsev, Leonid Petrovich: *See—*
Kovalenko, Leonid Maximovich; Tovazhnyansky, Leonid Leonidovich; Pertsev, Leonid Petrovich; Korobchansky, Ostap Alexandrovich; Chernonogov, Vladimir Sergeevich; and Sytnik, Vladimir Ilich, deceased, 3,862,661.

Pessell, Leopold; and Gardiner, Arthur Noel, to RCA Corporation. Method of making a joined metal structure. 3,862,488, Cl. 29-492.000.

Petersen, John W., Jr. Eyeless fishing pole. 3,862,509, Cl. 43-17.500.

Peterson, Carmen A. Fishing lure. 3,862,510, Cl. 43-42.140.

Peterson, Charles M., to Harry S. Peterson Company. Roof construction. 3,862,527, Cl. 52-94.000.

Peterson, Lenart A.; and Finley, John G., to Phillips Petroleum Company. Method of making a reusable, tear-resistant polyolefin-paper laminate. 3,862,869, Cl. 156-244.000.

Peterson, Robert R.: *See—*
Gorndt, John H.; Schmidt, Warren E.; and Peterson, Robert R., 3,862,812.

Petri, George W. Hair roller and integral clip. 3,862,637, Cl. 132-40.000.

Pfaulder-werke AG: *See—*
Ehret, Rudolph, 3,863,146.

Pfizer Inc.: *See—*
Goldman, Irving M., 3,862,933.

Philco-Ford Corporation: *See—*
Doyle, Walter M.; and White, Matthew B., 3,863,064.
Quinlan, Edward J.; and Reda, Frank E., 3,863,157.

Phillips Petroleum Company: *See—*
Cichowski, Robert S., 3,862,910.
Peterson, Lenart A.; and Finley, John G., 3,862,869.
Reusser, Robert E., 3,862,900.
Walker, Darrell W., 3,862,997.

Phillips, William H., Jr., to Carmet Company. Carbide die with multiple inserts. 3,862,566, Cl. 72-468.000.

Pierce, Ernest E.; and McColloch, Thomas R., to NCR Corporation. Aerodynamic spacing control apparatus for maintaining a desired spacing between a signal transducer and a recording surface by sensing electrical noise. 3,863,124, Cl. 318-638.000.

Pierce, John H., to Bouligny Company, The. Filament spinning take-up means. 3,862,722, Cl. 242-35.50R.

Pigeon, Michel: *See—*
Audenard, Bernard; Pigeon, Michel; and Stach, Claude, 3,863,162.

Pike, John E.; and Schneider, William P., to Upjohn Company, The. 15-Oxo,11βpgf$_2$ and . 3,862,984, Cl. 260-514.00D.

Pilato, Louis A.; Cressman, Paul J.; and Limburg, William W., to Xerox Corporation. Polymerization imaging by charge injection from a photoconductive layer. 3,862,841, Cl. 96-1.00R.

Pirman, Edward, to Pretty Products, Inc. Merchandise packaging device. 3,862,687, Cl. 206-527.000.

Plessey Handel und Investments A.G.: *See—*
Davies, Terrence Ardern; Garner, Geoffrey Michael; Hurditch, Rodney John; Lynch, James Thomas; Lanham, Tony Edward; and Fearnside, Kenneth, 3,862,790.
Ironmonger, Edward Albert; and Billam, Roy, 3,863,075.

Plomer, John J.: *See—*
Flynn, James P.; Lane, George A.; and Plomer, John J., 3,862,864.

Podesva, Ctirad; and Solomon, Carola, to Delmar Chemicals Limited. Phenyl-hydroxypropyl-substituted 1-amino adamantanes. 3,862,987, Cl. 260-570.600.

Poeschl, Klaus: *See—*
Heynisch, Hinrich; Poeschl, Klaus; and Veith, Werner, 3,863,092.

Pogorski, Louis August. Geochemical exploration method. 3,862,576, Cl. 73-432.00R.

Pollard, Ernest M., to General Electric Company. Means for monitoring the relative phase relationship between two variable-frequency periodic signals. 3,863,133, Cl. 321-5.000.

Pollard, Ernest M., to General Electric Company. Electric control circuits for a static power converter. 3,863,134, Cl. 321-5.000.

Pommer, Ernst-Heinrich: *See—*
Distler, Harry; Widder, Rudi; and Pommer, Ernst-Heinrich, 3,862,966.

Pond, David M., to Eastman Kodak Company. 4,8-Dimethyl- 12-oxotridecanal. 3,862,988, Cl. 260-593.00R.

Popeil Brothers, Inc.: *See—*
Gename, John L., 3,862,725.

Porter, Allan William Henry, to Aktiengesellschaft Adolph Sauer. Heald mounting for shaft frames of looms. 3,862,650, Cl. 139-91.000.

Porter, Wallace M., Jr. Method and apparatus for machining a workpiece to a selected dimension. 3,862,517, Cl. 51-91.00R.

Poschenrieder, Walter P., to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Time-of-flight mass spectrometer. 3,863,068, Cl. 250-287.000.

PPG Industries, Inc.: *See—*
McGuire, Kathleen A.; Hansen, Charles M.; and Christenson, Roger M., 3,862,894.

Preiss, Gunter, to Nixdorf Computer AG. Priority controlled selection of data sets in a data processing system. 3,863,225, Cl. 340-172.500.

Presant, Fred: *See—*
Mace, Harry W.; and Presant, Fred, 3,863,005.

Presson, Robert D.; and Grigsby, Albert J. Fractional distillation using a vapor side stream to control hcn concentration in purificatin of crude nitriles. 3,862,890, Cl. 203-71.000.

Prestegaard, Paul G. Rotary glue box apparatus. 3,862,617, Cl. 118-213.000.

Pretty Products, Inc.: *See—*
Pirman, Edward, 3,862,687.

Prince, Peter: *See—*
Armour, Frank K.; and Prince, Peter, 3,862,888.

Prinz, Richard: *See—*
Koehler, Michael; Elghani, Salah Elabd; and Prinz, Richard, 3,862,998.

Pro-Tech Inc.: *See—*
Thompson, Richard R.; and Irwin, Malcolm F., 3,862,575.

Probat-Werke von Gimborn & Co. K.G.: *See—*
Terhorst, Harold, 3,862,688.

Progil: *See—*
Chambon, Maurice; and Neel, Jean, 3,862,906.

Pryor, Arthur W.: *See—*
Ellis, John R. B.; and Pryor, Arthur W., 3,862,545.

Pulles, Eduard J., to GTE Automatic Electric Laboratories Incorporated. Plastic pawl with integral pawl spring. 3,862,580, Cl. 74-577.00S.

Pullman Incorporated: *See—*
Boyd, Harold B.; and Lambrix, James R., 3,862,898.
Murphy, James R.; and Schneider, Leland W., 3,862,899.

Putkowski, Ladislao (Wladyslaw). Press with adjustable platen latching mechanism. 3,862,596, Cl. 100-219.000.

Quadbeck-Seeger, Hans-Juergen: *See—*
Junge, Helmut; and Quadbeck-Seeger, Hans-Juergen, 3,862,977.
Ruechardt, Christoph; Hassmann, Volker; Quadbeck-Seeger, Hans-Juergen; and Armbrust, Herbert, 3,862,958.

Queen's University at Kingston: *See—*
Boadway, John D., 3,862,714.

Quinlan, Edward J.; and Reda, Frank E., to Philco-Ford Corporation. Built-in FM dipole antenna. 3,863,157, Cl. 325-365.000.

Rabie, Lee C. Digital Vehicle Detector. 3,863,206, Cl. 340-38.00L.

Rahrig, Donald D.: *See—*
Ritter, George F., Jr.; and Rahrig, Donald D., 3,862,828.

Ralston, Richard W.: *See—*
Wheeler, Robert H.; and Ralston, Richard W., 3,863,070.

Rank Xerox, Ltd.: *See—*
Fukushima, Osamu; Sato, Masamichi; and Matsumoto, Seiji, 3,862,619.

Rannenberg, George C.: *See—*
Emmons, Floyd R.; and Rannenberg, George C., 3,862,644.

Ratcliff, Henry Kevin, to Bendix Corporation, The. Thermally stable power amplifier. 3,863,170, Cl. 330-23.000.

Rau, James Edward: *See—*
McKee, Donald Eugene; and Rau, James Edward, 3,863,235.

Raver, Louis J., to General Motors Corporation. Dual battery charging generator. 3,863,127, Cl. 320-15.000.

Raymond Lee Organization, Inc., The: *See—*
Starke, John H., 3,862,642.

RCA Corporation: *See—*
Beres, Steven W.; and Carrion, Carmelo, Jr., 3,862,705.
Easter, Finis Claude; Aires, Ramon Hess; and Goldberg, Edwin Allen, 3,863,140.
Ettenberg, Michael; and Gilbert, Stephen Lee, 3,862,859.
Haferl, Peter Eduard, 3,863,106.
Knight, Mark Berwyn, 3,863,169.
Kosonocky, Walter Frank; and Williams, Brown F., 3,863,065.
McGrogan, Ellwood Patrick, Jr., 3,863,215.
Pessell, Leopold; and Gardiner, Arthur Noel, 3,862,488.
Seibert, William Louis; and Wilmarth, Paul Carleton, 3,863,164.
Steckler, Steven Alan, 3,863,080.
Steiman, Wolf; and Beres, Steven W., 3,862,741.
Stern, Herman Abraham, 3,862,830.
Thibodeau, Leslie Neil; and Smith, Lawrence Edward, 3,863,184.

Reda, Frank E.: *See—*
Quinlan, Edward J.; and Reda, Frank E., 3,863,157.

Reddish, Wilson: *See—*
Blythe, Anthony Reginald; and Reddish, Wilson, 3,863,108.

Reed, John A.: *See—*
Regitz, William M.; and Reed, John A., 3,863,230.

Reed Tool Company: *See—*
Skelly, Michael, 3,862,664.
Wallace, Duane W., 3,862,665.

Regitz, William M.; and Reed, John A., to Intel Corporation. MOS memory decoder circuit. 3,863,230, Cl. 340-173.00R.

Reisman, Arnold: *See—*
Berkenblit, Melvin; Lussow, Robert O.; and Reisman, Arnold, 3,862,831.

Reiter, Robert C., to Material Control, Inc. Quick change segmental brush. 3,862,462, Cl. 15-182.000.

Reiter, Robert C., to Material Control, Inc. Rotary brush construction. 3,862,463, Cl. 15-182.000.

Reiter, Robert C., to Material Control, Inc. Bin aerator assembly or unit. 3,862,707, Cl. 222-193.000.

Rekiere, Bernard J.: *See—*
Chen, Chungmin; Kelly, Michael J.; and Rekiere, Bernard J., 3,863,033.

Remenyik, Carl J. Centrifuge for the interacting of continuous flows. 3,862,715, Cl. 233-15.000.

Rentzepis, Peter Michael: *See—*
Indig, George Sanford; and Rentzepis, Peter Michael, 3,863,063.

Rentzsch, Max; and Hofmann, Gunther, to DIEHL. Safety device for explosive projectiles. 3,862,601, Cl. 102-49.300.

Research Laboratories of Australia Pty. Limited: *See—*
Marley, Brian George, 3,862,848.

Rettig, Charles E., to Litton Industrial Products, Inc. Means for controlling the output condition of a synchronous reluctance motor. 3,863,120, Cl. 318-166.000.

Rettig, Charles E., to Litton Industrial Products, Inc. Means for controlling the output condition of an induction motor. 3,863,121, Cl. 217-21.000.

Rettig, Charles E., to Litton Industrial Products, Inc. Control means for controlling the output condition of an alternating current induction motor. 3,863,122, Cl. 318-227.000.

Reusser, Robert E., to Phillips Petroleum Company. Removal of chemically combined chlorine and other impurities from hydrocarbons. 3,862,900, Cl. 208-262.000.

Revlon, Inc.: *See—*
Schefer, Eli I.; and Skolnik, Albert B., 3,862,639.

Rhone-Poulenc S.A.: *See—*
Chabert, Henri, 3,862,911.
Gattus, Jean; and Mallet, Maurice, 3,862,897.
Laurent, Serge; and Mallet, Maurice, 3,862,918.

Rhone-Progil: *See—*
Demoures, Bernard; Llauro, Daniel; and Giolito, Francois, 3,862,981.

Richardson, Hugh H., to General Electric Company. Method for evaluating manufacturing operational effects on insulated windings. 3,862,491, Cl. 29-593.000.

Richert, Karl Hartwig: *See—*
Dietrich, Werner; Wagner, Kuno; Roegler, Manfred; Kleimann, Helmut; and Richert, Karl Hartwig, 3,862,973.

Richter, Harvey E., to Tec Group, Inc., The. Additive diffusor. 3,862,747, Cl. 259-10.000.

Richter, Heinz; Kase, Walter; Kolle, Hans-Hermann; and Rothen, Johann, to Continental Gummi-Werke Aktiengesellschaft. Method and device for making conveyor belts. 3,862,559, Cl. 72-205.000.

Ridder, Georg Sven-Olof: *See—*
Bergstrom, Lars Rune; and Ridder, Georg Sven-Olof, 3,862,613.

Riegel Textile Corporation: *See—*
Brocklehurst, Charles E., 3,862,610.

Ringelheim, Harry M., deceased; Bleiberg, Shirley R., executrix; and Jason, John J. Visual display apparatus. 3,862,504, Cl. 40-106.530.

Ritter, George F., Jr.; and Rahrig, Donald D., to Libbey-Owens-Ford Company. Controlling glass sheet furnace & temperatures. 3,862,828, Cl. 65-29.000.

Robbins, Gordon J.: *See—*
Johnson, Darrel D.; Kaufman, Carl L.; Lohrey, Fred H.; and Robbins, Gordon J., 3,863,232.

Robert, Stewart: *See—*
Cheavens, Thomas Henry; and Robert, Stewart, 3,862,960.

Roberts, Howard Rudy. Pedal mechanism. 3,862,579, Cl. 74-89.200.

Robertshaw Controls Company: *See—*
Hull, Bradford N., 3,863,185.

Robinson, John B. Method of preparing a ground meat pattie for storage and transportation. 3,863,020, Cl. 426-513.000.

Rockafellow, Elden J. Car wash apparatus. 3,862,460, Cl. 15-97.00R.

Rockwell International Corporation: *See—*
Hanson, Russell W., 3,863,136.
Johnson, Frederick W.; Trent, Dale W.; and Escoffier, Raymond P., 3,863,161.
McKee, Donald Eugene; and Rau, James Edward, 3,863,235.

Roczynski, Chester P.: *See—*
Roczynski, Joseph P.; and Roczynski, Chester P., 3,862,815.

Roczynski, Joseph P.; and Roczynski, Chester P., to Valley Metallurgical Processing Co., Inc. Record producing apparatus. 3,862,815, Cl. 425-116.000.

Rode, France; Crowley, William L., Jr.; Walker, Alexander D. R.; and Cochran, David S., to Hewlett-Packard Company. General purpose calculator with capability for performing interdisciplinary business calculations. 3,863,060, Cl. 235-156.000.

Roegler, Manfred: *See—*
Dietrich, Werner; Wagner, Kuno; Roegler, Manfred; Kleimann, Helmut; and Richert, Karl Hartwig, 3,862,973.

Rohm and Haas Company: *See—*
Hamann, Herman C.; and Stellwagen, William, Jr., 3,862,924.
Hoey, Charles Edwin, 3,862,872.
Johnson, Wayne O.; Warner, Harlow L.; and Yih, Roy Y., 3,862,833.

Rohrer, Gene D., to International Business Machines Corporation. Data preprocessing system for character recognition systems. 3,863,219, Cl. 340-146.30C.

Roland, James P.; and McKinnon, Matthew C., to General Motors Corporation. Liquid level sensor having an integral ptc and ntc thermistor. 3,863,210, Cl. 340-59.000.

Roland, John Thomas: *See—*
Dorwart, Charles Edward, Jr.; Bierly, Meade Goodman; Fendrich, Charles Nelson, Jr.; and Roland, John Thomas, 3,863,194.

Rork, Glen A.: *See—*
Bernhard, Robert W.; and Rork, Glen A., 3,862,620.

Rose, John Brewster: *See—*
Newton, Alan Branford; Rose, John Brewster; and Leslie, Victor Jeffrey, 3,862,990.

Rosenberry, Harold H., to Amana Refrigeration, Inc. Microwave oven interlock switch actuator. 3,863,045, Cl. 219-10.55C.

Roshaven, Harold L. Cable holder. 3,862,709, Cl. 224-5.00P.

Rostron, Joseph R.; and Dropik, Sylvester J., to Westinghouse Electric Corporation. High-voltage circuit-interrupter having a closing resistance and improved shunting-resistance contacts therefor. 3,863,041, Cl. 200-144.0AP.

Rothen, Johann: *See—*
Richter, Heinz; Kase, Walter; Kolle, Hans-Hermann; and Rothen, Johann, 3,862,559.

Rotta, Nicholas R. Fluid pressure controlled means for producing peristaltic operation of series-connected inflatable chambers in therapeutic devices, pumps and the like. 3,862,629, Cl. 128-24.00R.

Rowell, William G., to Honeywell Inc. Dual ground integrity monitoring circuit. 3,863,238, Cl. 340-255.000.

Roze, Alberts: *See—*
Fencl, Vernon; Luedi, Hans R.; Stettler, Christian H.; and Roze, Alberts, 3,862,563.

Rudolph, Luther D.: *See—*
Semon, Warren L.; and Rudolph, Luther D., 3,863,234.

Rudolph, Werner; Massonne, Joachim; and Fazniewscy, Karl-Heinz, to Kali-Chemie Aktiengesellschaft. Process for making perfluorocarboxylic acids and fluorides thereof. 3,862,971, Cl. 260-408.000.

Ruechardt, Christoph; Hassmann, Volker; Quadbeck-Seeger, Hans-Juergen; and Armbrust, Herbert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture of indazoles. 3,862,958, Cl. 260-310.00C.

Russell, Herman F., to Hobart Corporation. Meat handling equipment. 3,862,682, Cl. 198-229.000.

Rutkowski, Eugene V.: *See—*
Martinez, John S.; Ogren, John R.; and Rutkowski, Eugene V., 3,863,176.

Ryburn, Scott W., to Honeywell Information Systems, Inc. Configurable communications controller having shared logic for providing predetermined operations. 3,863,226, Cl. 340-172.500.

Rysti, Alpo; Harma, Lasse; and Sjodahl, Kurt, to Sateko Oy. Method for measuring thickness of pieces of timber. 3,862,496, Cl. 33-124.000.

Saft-Societe des Accumulateurs Fixes et de Traction: *See—*
Godard, Pierre; and Patry, Eric, 3,863,123.

Said, Sami I.; Bodanszky, Miklos; Mutt, Viktor; and Klausner, Yakir. Process for preparation of vasoactive intestinal peptide. 3,862,927, Cl. 260-112.500.

Sakabe Industry Co., Ltd.: *See—*
Sakabe, Koji; Ito, Hideo; and Katura, Nobuyuki, 3,862,660.

Sakabe, Koji; Ito, Hideo; and Katura, Nobuyuki, to Sakabe Industry Co., Ltd. Durable mold of multilayer construction. 3,862,660, Cl. 164-349.000.

Salzer, Erwin, to Chase-Shawmut Company, The. Electric cartridge fuse with blown fuse indicator. 3,863,191, Cl. 337-244.000.

Sam, Joseph, to University of Mississippi, The. 6-Phenethyl-3-piperidinecarboxamides. 3,862,937, Cl. 260-247.50G.

Sanabria, Rafael A., to GTE Automatic Electric Laboratories Incorporated. Method and arrangement for testing a core memory. 3,863,227, Cl. 340-172.500.

Sanderson, Anne: *See—*
Wilson, Richard A.; Mussinan, Cynthia; Katz, Ira; Giacino, Christopher; Sanderson, Anne; and Shuster, Edward J., 3,863,013.

Sandoz-Wander, Inc.: *See—*
Houlihan, William J., 3,862,943.

Sano, Kazuo: *See—*
Shimotsuma, Teruo; Sano, Kazuo; and Fukuda, Yutaka, 3,862,907.

Santilli, Arthur A.: *See—*
Kim, Dong H.; and Santilli, Arthur A., 3,862,948.

Sarantakis, Dimitrios; and McKinley, Wayne A., to American Home Products Corporation. Preparation of somatotropin release inhibiting factor and intermediates therefor. 3,862,925, Cl. 260-112.500.

Sateko Oy: *See—*
Rysti, Alpo; Harma, Lasse; and Sjodahl, Kurt, 3,862,496.

Sato, Makoto; and Schmoock, Roy F., to Fischer & Porter Co. Common-mode rejection amplifying system. 3,863,172, Cl. 330-69.000.

Sato, Masamichi; and Fukushima, Osamu, to Xerox Corporation. Liquid developing apparatus for developing an electrostatic image. 3,862,618, Cl. 118-637.000.

Sato, Masamichi: *See—*
Fukushima, Osamu; Sato, Masamichi; and Matsumoto, Seiji, 3,862,619.

Savit, Carl H., to Western Geophysical Company of America. Apparatus for digital correlation. 3,863,058, Cl. 235-152.000.

Scales, Brian T. Radial truck. 3,862,606, Cl. 105-167.000.

Schall, Myron M., to Dana Corporation. Clutch controlled by engine speed and torque. 3,862,676, Cl. 192-.032.

Schaumann, Wolfgang: *See—*
Kaiser, Fritz; Lubs, Hans Joachim; Schaumann, Wolfgang; and Voigtlander, Wolfgang, 3,862,931.

Scheerhorn, Douglas; Van Kuik, Dirk J.; Faiks, Frederick S.; and Hodges, Ronald R., to Steelcase, Inc. Secretarial work station. 3,862,785, Cl. 312-223.000.

Schefer, Eli I.; and Skolnik, Albert B., to Revlon, Inc. Mascara applicator. 3,862,639, Cl. 132-112.000.

Scheib, Paul E.; and Shumate, Robert H., to General Electric Company. Amplifier circuit for minimizing voltage offset. 3,863,173, Cl. 330-98.000.

Scheunemann, Horst: *See—*
Buchin, Karl; and Scheunemann, Horst, 3,862,734.

Schifano, William P. Device for forming a protective airflow forward of flat-fronted vehicles. 3,862,777, Cl. 296-91.000.

Schiffer, Gunter, to Kleinewefers Industrie Compania GmbH. Method of and apparatus for wet treating textile fabrics. 3,862,822, Cl. 8-137.000.

Schindler, Edgar C.; and McEachron, John C., to Nelco Corporation. Molded electrical junction box. 3,863,021, Cl. 174-53.000.

Schindler, Edgar C.; and McEachron, John C., to Nelco Corporation. Electrical box hanger structure. 3,863,037, Cl. 174-58.000.

Schlatter, Gerald Lance; and Miller, Charles Eveleigh, to International Telephone and Telegraph Corporation. Method of an apparatus for producing fluid gravity and density analogs and flowmeters incorporating gravitometers. 3,862,568, Cl. 73-32.00A.

Schlegel GmbH: *See—*
Blose, Werner, 3,862,873.

Schloemann Aktiengesellschaft: *See—*
Simons, Willi, 3,862,659.

Schluter, Heinz, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft Werk Nurnberg. Device for testing and repeat checking of pressure containers. 3,862,578, Cl. 73-432.00R.

Schmersal, Larry J.; Baker, Theodore C.; and Murley, Ellsworth M., to Owens-Illinois, Inc. Method and apparatus for generation of gray scale in gaseous discharge panel using multiple memory planes. 3,863,023, Cl. 178-6.000.

Schmidt, Hermann Karl; and Tauzin, Jean Michel, to Constructions Navales et Industrielles de la Mediterranee C.N.I.M. Fire ranging method for launchers of self-propelled missiles. 3,862,584, Cl. 89-1.800.

Schmidt, Warren E.: *See—*
Gorndt, John H.; Schmidt, Warren E.; and Peterson, Robert R., 3,862,812.

Schmitt, Roland, to Industriewerke Karlsruhe-Augsburg Aktiengesellschaft. Aseptic packing container and method of making and filling it. 3,862,684, Cl. 206-277.000.

Schmoock, Roy F.: *See—*
Sato, Makoto; and Schmoock, Roy F., 3,863,172.

Schneider, Leland W.: *See—*
Murphy, James R.; and Schneider, Leland W., 3,862,899.

Schneider, Martin Victor: *See—*
Glance, Bernard; and Schneider, Martin Victor, 3,863,181.

Schneider, Werner: *See—*
Werner, Lothar; and Schneider, Werner, 3,862,965.

Schneider, William P.: *See—*
Pike, John E.; and Schneider, William P., 3,862,984.

Schultes, Max: *See—*
Kranz, Hans Werner; and Schultes, Max, 3,863,183.

Schultz, Dennis L.: *See—*
Strecker, Gerald L.; and Schultz, Dennis L., 3,862,813.

Schwaller, Bernard L. Dual stage compressor spring. 3,862,751, Cl. 267-91.000.

Schwan, Thomas J., to Morton-Norwich Products, Inc. 1,2,3,4,6,7,8,9-Octahydro-3,8-dimethyl-4,9-diphenylpyrido (3,4-g)isoquininoline dihydrochloride. 3,862,945, Cl. 260-286.00R.

Schwantje, Gerd: *See—*
Eilingsfeld, Heinz; and Schwantje, Gerd, 3,862,944.

Schwarz, Walter. Electrically insulating tube coupling. 3,862,771, Cl. 285-54.000.
Schwemmer, Martin; Bors, Hans; and Goetz, Albert, to Triatex International AG fur Textile Forschung und Entwicklung. Apparatus for finishing cellulose-containing textile materials. 3,862,553, Cl. 68-15.000.
Scientific Drilling Controls: *See—*
Isham, Carroll E.; and Elas, Robert E., 3,862,499.
SCM Corporation: *See—*
Gilchrist, Allan B. E., 3,862,893.
Scott & Fetzer Company, The: *See—*
Burgoon, Jack L., 3,862,469.
Scott Paper Company: *See—*
Norton, Henry J.; and Boehmer, Brian E., 3,862,472.
Scull, Herbert M., Jr., to Ethyl Corporation. Process for producing aluminium. 3,862,835, Cl. 75-68.00C.
Sealed Power Corporation: *See—*
Bush, Jerome J., 3,862,518.
Sears, Roebuck and Co.: *See—*
Ozimek, Chester E.; and Eldridge, Kenneth L., Jr., 3,862,679.
Sedgwick, Thomas O.: *See—*
Cowher, Melvyn E.; and Sedgwick, Thomas O., 3,862,858.
Seek, Robert L.: *See—*
Bivona, Leonard P.; Nunnink, Leonard I., Jr.; and Seek, Robert L., 3,862,710.
Seibert, William Louis; and Wilmarth, Paul Carleton, to RCA Corporation. Tube filament power supply. 3,863,164, Cl. 328-270.000.
Seki, Susumu; Noumi, Makoto; Takaoka, Tadashi; and Toriyama, Hisao, to Hitachi, Ltd. Fault recognition apparatus for arithmetic/-logic devices. 3,863,059, Cl. 235-153.00B.
Selliken, Conrad J. Magnetically attached baseball base. 3,862,756, Cl. 273-25.000.
Sellsted, John H.; and Teller, Daniel M., to American Home Products Corporation. Thallium (I) Penicillanates. 3,862,932, Cl. 260-239.100.
Semon, Warren L.; and Rudolph, Luther D., to Monsanto Company. Fast bubble logic gates. 3,863,234, Cl. 340-174.0TF.
Sengenberger, Don F. Mounting having movably mounted flexible hook means. 3,862,550, Cl. 63-29.00R.
Senn, Georg, to Spribag Aktiengesellschaft. Sluice type feeding device. 3,862,780, Cl. 302-36.000.
Sennik, John J., to Electrohome Limited. Spot killer network for cathode ray tube. 3,863,096, Cl. 315-20.000.
Sensonics, Inc.: *See—*
De Mayo, John F., 3,863,114.
Sexton, James H.: *See—*
Patton, Bobbie J.; Sexton, James H.; and Harrell, John W., 3,863,203.
Shapiro, Aron Beniaminovich; Chernyavsky, Vladimir Pavlovich; and Kadi-Ogly, Ibragim Akhmedovich. Brush for electric machines. 3,863,085, Cl. 310-242.000.
Shaw, Irving F.: *See—*
Goldberg, Raymond; and Shaw, Irving F., 3,862,654.
Shell Oil Company: *See—*
Kirby, Peter; and Isaac, Eirlys R., 3,862,959.
Sheng, Ming N.; Zajacek, John G.; and Baker, Thomas N., III, to Atlantic Richfield Company. Expoxidation of olefins with less stable organic hydroperoxides by using an alcohol stabilizing agent. 3,862,961, Cl. 260-348.50L.
Shepherd, John Michael: *See—*
Smith, Donald; and Shepherd, John Michael, 3,862,711.
Sherwin-Williams Company, The: *See—*
Grivas, John C., 3,862,955.
Shetty, Bola Vithal, to Pennwalt Corporation. Preparation of 3-aryl and 3-aralkyl 6-sulfamyl-7-halo-1,3,4-tetrahydro-4-quinazolinone. 3,862,949, Cl. 260-256.50R.
Shiina, Naonori: *See—*
Kasai, Akira; Inui, Mitsuo; Hoshino, Nobuo; Hattori, Kenichi; Shiina, Naonori; and Nakae, Hiroyuki, 3,863,000.
Shim, Kyung S., to Stauffer Chemical Company. Oligomer composition and products made therefrom. 3,862,923, Cl. 260-79.50C.
Shimizu, Katsumi; Kuroda, Tokiziro; and Komiya, Kenzi, to Mitsui Mining and Smelting Co., Ltd. Process for continuous production of a large sized zinc-base alloy ingot. 3,862,839, Cl. 75-135.000.
Shimotsuma, Teruo; Sano, Kazuo; and Fukuda, Yutaka, to Nippon Kokan Kabushiki Kaisha. Method for rapidly mixing different kinds of gas. 3,862,907, Cl. 252-188.000.
Shipman, Vern D., to Headway Research, Inc. Method for achieving thin films on substrates. 3,862,856, Cl. 117-201.000.
Shires, Frank, to Dell Foods Limited. Method of producing an egg product. 3,863,018, Cl. 426-388.000.
Shirota, Kohei, to Nihon Denshi Kabushiki Kaisha. Electron microscope with energy analyzer. 3,863,069, Cl. 250-305.000.
Shortridge, Earl W.: *See—*
Pace, Gerald F.; and Shortridge, Earl W., 3,863,002.
Shufflebarger, Earl D.: *See—*
Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; Cunningham, Frank M.; and Danko, Oliver L., 3,862,740.
Shumate, Robert H.: *See—*
Scheib, Paul E.; and Shumate, Robert H., 3,863,173.
Shuster, Edward J.: *See—*
Wilson, Richard A.; Mussinan, Cynthia; Katz, Ira; Giacino, Christopher; Sanderson, Anne; and Shuster, Edward J., 3,863,013.
Siciliano, Anthony J.: *See—*
Peppler, William S.; Keen, Everett M.; Siciliano, Anthony J.; and Baker, Graham, 3,862,621.
SIDAPLAX: *See—*
Feldman, Peter Blandford, 3,862,880.
Siemens Aktiengesellschaft: *See—*
Heynisch, Hinrich; Poeschl, Klaus; and Veith, Werner, 3,863,092.
Kranz, Hans Werner; and Schultes, Max, 3,863,183.
Siems, Lee E., to Digital Data Systems, Inc. Apparatus for serially-correlating time series. 3,863,057, Cl. 235-152.000.
Sifniades, Stylianos; Fuhrmann, Robert; and Tunick, Allen A., to Allied Chemical Corporation. Resolution of lysineamide. 3,862,985, Cl. 260-561.00A.
Signouret, Jean-Baptiste; Labat, Yves; and Esclamadon, Christian, to Societe Nationale des Petroles D'Aquitaine. Process for the preparation of organic dithiol polysulfides. 3,862,922, Cl. 260-79.000.
Simes, James G.: *See—*
Gillott, Donald H.; and Simes, James G., 3,863,082.
Simic, Dragomir: *See—*
Berndt, Heinz; Simic, Dragomir; and Zupancic, Heinz-Ulrich, 3,862,912.
Simko, David M.: *See—*
Gallagher, Bernard J.; Shufflebarger, Earl D.; Simko, David M.; Cunningham, Frank M.; and Danko, Oliver L., 3,862,740.
Simons, Willi, to Schloemann Aktiengesellschaft. Method and apparatus for conveying a strand through a continuous casting installation. 3,862,659, Cl. 164-250.000.
Simpson, James H.; Bayley, Donald S.; and Greenwood, Ivan A., to Singer Company, The. High sensitivity gradient magnetometer. 3,863,144, Cl. 324-0.50R.
Sims, Ernest G.; and Borello, Margaret M., to Sims, Ernest G. Gripper tool. 3,862,776, Cl. 294-104.000.
Singer Company, The: *See—*
Klebe, Elmer C., Jr.; and Looper, Timothy J., 3,862,520.
Simpson, James H.; Bayley, Donald S.; and Greenwood, Ivan A., 3,863,144.
Singh, Gurdial: *See—*
Lander, Emil; Yackel, Richard A.; and Singh, Gurdial, 3,863,118.
Singleton, Albert. Rotary barrel pick-up in automatic plating apparatus. 3,862,896, Cl. 204-198.000.
Sjodahl, Kurt: *See—*
Rysti, Alpo; Harma, Lasse; and Sjodahl, Kurt, 3,862,496.
Skelly, Michael, to Reed Tool Company. Earth boring apparatus. 3,862,664, Cl. 173-150.000.
Skolnick, Max; and Steckowich, William, to Skolnick, Max. Sleep inhibiting alarm. 3,863,243, Cl. 340-279.000.
Skolnik, Albert B.: *See—*
Schefer, Eli I.; and Skolnik, Albert B., 3,862,639.
Sloboda, Adolph Edward: *See—*
Lang, Stanley Albert, Jr.; Cohen, Elliott; and Sloboda, Adolph Edward, 3,863,010.
Sloboda, Meczyslaw Herman; and Hatswell, John Sidney, to Johnson Matthey & Co., Limited. Brazing alloys. 3,862,838, Cl. 75-134.00C.
Small, Rudolph E., to Paper Converting Machine Company. Fastener for disposable diaper. 3,862,634, Cl. 128-284.000.
Smars, Erik: *See—*
Mogensen, Palne; Smars, Erik; and Kaij, Mats J., 3,863,107.
Smit, Henry, to Tassell, Leslie E., a part interest. Pressure pin capturing system for traveling bolsters. 3,862,565, Cl. 72-448.000.
Smith, Donald; and Shepherd, John Michael, to I.W.S. Nominee Company Limited. Yarn feeding device for textile machines such as knitting machines and the like. 3,862,711, Cl. 226-184.000.
Smith, Elliott P.; and Wachsmuth, Robert H., to McGraw-Hill, Inc., by said Elliott P. Smith. Controlled-reading device. 3,862,799, Cl. 353-88.000.
Smith, Eugene C., to GTE Automatic Electric Laboratories Incorporated. Uniform plating current apparatus and method. 3,862,891, Cl. 204-27.000.
Smith, George B.: *See—*
Fisher, Michael H.; Smith, George B.; and Hoff, Dale R., 3,863,012.
Smith, Lawrence Edward: *See—*
Thibodeau, Leslie Neil; and Smith, Lawrence Edward, 3,863,184.
Smith, Spurgeon E., to Tracor, Inc. Method and apparatus for developing relative direction and distance data. 3,863,256, Cl. 343-112.00R.
Smoak, Richard H.; Staut, Ronald; and Burst, John F., to General Refractories Company. Process for preparing ceramic compositions. 3,862,846, Cl. 106-73.100.
Snow, John Procter: *See—*
Callahan, James J.; and Snow, John Procter, 3,862,544.
Societe des Procedes Modernes D'Injection Sopromi: *See—*
Monpetit, Louis A., 3,863,054.
Societe d'Exploitation des Cables Electriques Systeme Berthoud Borel & Cie: *See—*
Fellrath, Paul-Henri; and Lavanchy, Gerard, 3,863,148.
Societe Industrielle Honeywell Bull (Societe Anonyme): *See—*
Gossett, Cyrille, 3,863,223.
Societe Nationale des Petroles D'Aquitaine: *See—*
Signouret, Jean-Baptiste; Labat, Yves; and Esclamadon, Christian, 3,862,922.
Solomon, Carola: *See—*
Podesva, Ctirad; and Solomon, Carola, 3,862,987.
Solvay & Cie: *See—*
Martens, Guy; and Godfroid, Marcel, 3,862,995.
Sony Corporation: *See—*
Hoshino, Mitsuo, 3,863,266.
Southco, Inc.: *See—*
Bisbing, Robert H., 3,862,773.

Specialty Products Development Corporation: *See*—
Timmerman, Hubert G.; and Catanzarite, Vincent O., 3,862,866.
Spector, George: *See*—
Kolarik, John P.; and Spector, George, 3,862,686.
Spectrol Electronics Corporation: *See*—
Tygard, Charles M.; and Cameron, James H., 3,863,039.
Speigel, Kenneth, to GTE Sylvania Incorporated. Coated pattern mask for use in forming a color CRT screen structure and method for coating the mask. 3,863,086, Cl. 313-408.000.
Speirs, Kenneth K.; Weinstein, Martin; and Blize, Roy L., to Chromalloy American Corporation, The. Method of producing Magnesium-Based coating for the sacrificial protection of metals. 3,862,851, Cl. 117-70.00C.
Sperry Rand Corporation: *See*—
Butler, Gene R., 3,862,692.
Hock, Bernhard; and Gumbrecht, Kurt Philipp, 3,862,788.
Lerner, Seymour D., 3,863,198.
Spillers, Frank Wayne, to Dow Chemical Company, The. Filament reinforced film. 3,862,868, Cl. 156-244.000.
Spinnett, Raymond G. Engine powered from external every force. 3,862,543, Cl. 60-530.000.
Spinnett, Raymond G. Torque conversion systems. 3,862,622, Cl. 123-8.130.
Spribag Aktiengesellschaft: *See*—
Senn, Georg, 3,862,780.
Staar, S.A.: *See*—
Staar, Theophiel Clement Jozef Lodewijk, 3,862,729.
Staar, Theophiel Clement Jozef Lodewijk, to Staar, S.A. Tape transport with two fast forward speeds. 3,862,729, Cl. 242-206.000.
Stach, Claude: *See*—
Audenard, Bernard; Pigeon, Michel; and Stach, Claude, 3,863,162.
Stachnik, Michael S.: *See*—
Muskat, Robert L.; Connors, Robert H.; Klopfenstein, King L.; and Stachnik, Michael S., 3,862,666.
Stahnecker, Erhard: *See*—
Fried, Micharl; Moeller, Rolf; Zuern, Ludwig; and Stahnecker, Erhard, 3,862,915.
Stanaitis, Peter P., to Textron Inc. Pre-assembled terminal screw and washers and method of manufacture. 3,862,458, Cl. 10-155.00A.
Standardgraph Filler & Fiebig GmbH: *See*—
Koelichen, Harald, 3,862,683.
Starke, John H., to Raymond Lee Organization, Inc., The, a part interest. Air bleeding device. 3,862,642, Cl. 137-354.000.
State of Isreal, Ministry of Development, The: *See*—
Zeigerson, Esther; and Bloch, Moshe Rudolf, 3,862,854.
Stauffer Chemical Company: *See*—
Gutman, Arnold D., 3,862,999.
Shim, Kyung S., 3,862,923.
Staut, Ronald: *See*—
Smoak, Richard H.; Staut, Ronald; and Burst, John F., 3,862,846.
Stech, Jaroslav: *See*—
Holub, Josef; Lzicar, Josef; Dubanek, Jan; and Stech, Jaroslav, 3,862,647.
Steckler, Steven Alan, to RCA Corporation. Current output frequency and phase comparator. 3,863,080, Cl. 307-235.00R.
Steckowich, William: *See*—
Skolnick, Max; and Steckowich, William, 3,863,243.
Steelcase, Inc.: *See*—
Drenten, Bruce J.; and Breiner, Frank S., 3,862,506.
Korell, Donald D.; and Wilcox, Gale F., 3,862,789.
McCrackin, Lonnie L., 3,862,524.
Scheerhorn, Douglas; Van Kuik, Dirk J.; Faiks, Frederick S.; and Hodges, Ronald R., 3,862,785.
Steele, Donald F.; and Enemark, Robert B., to Electro Signal Lab. Inc. Optical smoke detector. 3,863,076, Cl. 250-574.000.
Steiman, Wolf; and Beres, Steven W., to RCA Corporation. Axial-movement type springless valve. 3,862,741, Cl. 25-353.000.
Steinemann, Willy: *See*—
Entschel, Roland; and Steinemann, Willy, 3,862,929.
Stellwagen, William, Jr.: *See*—
Hamann, Herman C.; and Stellwagen, William, Jr., 3,862,924.
Stephenne, Hubert: *See*—
Deschenes, Pierre A.; Stephenne, Hubert; and Villeret, Michel, 3,863,248.
Stern, Herman Abraham, to RCA Corporation. Method of forming vitreous enclosures for liquid crystal cells. 3,862,830, Cl. 65-58.000.
Stettler, Christian H.: *See*—
Fencl, Vernon; Luedi, Hans R.; Stettler, Christian H.; and Roze, Alberts, 3,862,563.
Stevens, J. L. Ground clearing attachment for tractors. 3,862,539, Cl. 56-504.000.
Stimler, Morton, to United States of America, Navy. Laser image intensifier. 3,863,166, Cl. 330-4.300.
Stol, Miroslav: *See*—
Wichterle, Otto; Kliment, Karel; Vacik, Jiri; Ott, Zdenek; Stol, Miroslav; and Dvorak, Jan, 3,862,452.
Stolting, Klaus; Zimmermann, Hans-Georg; and Klos, Ewald, to Kalle Aktiengesellschaft. Conveying apparatus. 3,862,594, Cl. 100-95.000.
Strecker, Gerald L.; and Schultz, Dennis L., to Gardner-Denver Company. Rotary eccentric fluid motor. 3,862,813, Cl. 418-61.00B.
Strom, John R., to Sweco, Inc. Material handling system for vibratory mills. 3,862,693, Cl. 214-17.00C.
Strommer, Palmer K., to General Mills, Inc. Process for texturing a protein slurry. 3,863,019, Cl. 426-511.000.
Strunc, Robert Winfield; and Doty, Robert Kenneth, to Chicago Bridge & Iron Company. Automatic bleeder vent for covered floating roof tanks. 3,862,701, Cl. 220-227.000.
Stumpmeier, Fritz, to Hydromatik GmbH. Two-way valve of the seated type. 3,862,738, Cl. 251-43.000.
Sturt, Alan Charles, to BP Chemicals Limited. Polymerisation process. 3,862,913, Cl. 260-17.00R.
Suda, Hiroshi; and Matui, Hideo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for the preparation of incombustible composite materials. 3,862,870, Cl. 156-273.000.
Sugimoto, Takashi: *See*—
Taniguchi, Takashi; Abe, Kunihiro; and Sugimoto, Takashi, 3,862,881.
Sullivan, Haskell A., to Sullivan Mfg. & Sales Co. Load bearing stand. 3,862,733, Cl. 248-48.000.
Sullivan Mfg. & Sales Co.: *See*—
Sullivan, Haskell A., 3,862,733.
Sun Chemical Corporation: *See*—
Tellerman, Jacob, 3,862,795.
Susuki, Rinnosuke: *See*—
Hoshi, Hiroshi; Murakami, Keiichi; Maeda, Ichinari; and Susuki, Rinnosuke, 3,862,963.
Sutter Hospitals Medical Research Foundation: *See*—
Gillott, Donald H.; and Simes, James G., 3,863,082.
Svenska Cellulosa Aktiebolaget: *See*—
Wennerblom, Bengt Axel; and Jorgensen, Sven Erik, 3,862,901.
Swank, David T., to Flexible Company, The. Door hinge. 3,862,470, Cl. 16-128.00R.
Sweco, Inc.: *See*—
Strom, John R., 3,862,693.
Swedberg, Nils Einar, to Eaton Corporation. Lubrication system for a hydraulic device. 3,862,814, Cl. 418-102.000.
Swedlow, Jerold L.: *See*—
Kornblith, Jeffrey S.; and Swedlow, Jerold L., 3,862,603.
Sweeney, William M. Low pour point gas fuel from waxy crudes. 3,862,825, Cl. 44-62.000.
Swet, Charles J.: *See*—
Wyatt, Theodore; and Swet, Charles J., 3,862,732.
Swinamer, Roy V.; and Larkin, C. Carroll. Intercommunication network for retail check out counters. 3,863,245, Cl. 340-286.000.
Swindell, E. LeRoy; and Amodio, Michael Peter. Semi automatic oiling die stock. 3,862,457, Cl. 10-106.000.
Sycor, Inc.: *See*—
Klumpp, Marlin K., 3,863,265.
Sytnik, Ljudmila Vladimirovna, administratrix: *See*—
Kovalenko, Leonid Maximovich; Tovazhnyansky, Leonid Leonidovich; Pertsev, Leonid Petrovich; Korobchansky, Ostap Alexandrovich; Chernonogov, Vladimir Sergeevich; and Sytnik, Vladimir Ilich, deceased, 3,862,661.
Sytnik, Vladimir Ilich, deceased: *See*—
Kovalenko, Leonid Maximovich; Tovazhnyansky, Leonid Leonidovich; Pertsev, Leonid Petrovich; Korobchansky, Ostap Alexandrovich; Chernonogov, Vladimir Sergeevich; and Sytnik, Vladimir Ilich, deceased, 3,862,661.
Syva Company: *See*—
Gottwald, Ken; Burkoth, Terry; and Ullman, Edwin F., 3,862,951.
Szabo, Georges: *See*—
Weisang, Joseph-Edouard; Szabo, Georges; and Maurin, Jean, 3,862,964.
Szmuskovicz, Jacob, to Upjohn Company, The. Dibenzo[b,f]-5-triazolo[4,3-a][1,4]diazepin-3-ones. 3,862,950, Cl. 260-268.0PC.
Szmuszkovicz, Jacob: *See*—
Hester, Jackson B., Jr.; and Szmuszkovicz, Jacob, 3,862,956.
T. D. Williamson, Inc.: *See*—
Vernooy, Burton; and Kendall, Robert L., 3,862,497.
Tachibana, Kyozo, to Hitachi, Ltd. Commutatorless motor apparatus. 3,863,119, Cl. 318-82.000.
Tackaberry, Robert S.: *See*—
Mahieu, William R.; Tackaberry, Robert S.; and Chance, Philip G., 3,863,187.
Tackett, Edd: *See*—
Broscoff, Mary E.; and Tackett, Edd, 3,862,516.
Takano, Tomoteru: *See*—
Egawa, Mitsuru; and Takano, Tomoteru, 3,863,165.
Takaoka, Tadashi: *See*—
Seki, Susumu; Noumi, Makoto; Takaoka, Tadashi; and Toriyama, Hisao, 3,863,059.
Takizawa, Hideo: *See*—
Tsuneishi, Norihiro; Miyabayashi, Yoshiyuki; Aida, Hiroyuki; and Takizawa, Hideo, 3,862,490.
Tamm, Rolf Gunter; and Witte, Wolfgang Wilhelm. Tubular sample heating device for flameless atomic absorption spectrophotometry. 3,862,805, Cl. 356-244.000.
Tanaka, Akira: *See*—
Ulrich, Charles J.; and Tanaka, Akira, 3,862,726.
Taniguchi, Takashi; Abe, Kunihiro; and Sugimoto, Takashi, to Mitsubishi Petrochemical Company Limited. Molded lamellar gypsum product. 3,862,881, Cl. 161-162.000.
Tappen, Harold B.; and Corwin, John Roy, to Eaton Corporation. Quick-change drive unit. 3,862,672 Cl. 184-6.120.
Tarasevich, Andrew: *See*—
Crofut, Walter A.; Fletcher, Robert C.; Tarasevich, Andrew; and Andersen, Rodney J., 3,863,262.
Tarsha, Manuel A., to Parker-Hannifin Corporation. Combined filling tube and pressure indicator. 3,862,646, Cl. 138-104.000.

Tashiro, Koji: *See—*
Uebayashi, Yoshitaka; Tashiro, Koji; and Anayama, Toshifumi, 3,862,561.

Tassell, Leslie E.: *See—*
Smit, Henry, 3,862,565.

Taub Family Trust U/A: *See—*
Taub, Ronald, 3,862,689.

Taub, Ronald, to Taub Family Trust U/A. Interlocking container for vertical displays. 3,862,689, Cl. 211-126.000.

Tauzin, Jean Michel: *See—*
Schmidt, Hermann Karl; and Tauzin, Jean Michel, 3,862,584.

Taylor, Donald R., to Honeywell Information Systems, Inc. Apparatus for assembling and disassembling data characters transferred between data handling devices. 3,863,217, Cl. 340-146.10C.

Taylor, Donald R., to Honeywell Information Systems, Inc. Apparatus for detecting and elminating a transfer of noise records to a data processing apparatus. 3,863,228, Cl. 340-172.500.

Taylor, Wilfred Kenelm, to National Research Development Corporation. Read only memory with annular fuse links. 3,863,231, Cl. 340-173.0SP.

Teac Corporation: *See—*
Ikeda, Yasuo, 3,863,268.

Tec Group, Inc., The: *See—*
Richter, Harvey E., 3,862,747.

TED Bildplatten Aktiengesellschaft; AEG-Telefunken, TELDEC: *See—*
Bruch, Walter, 3,863,022.

Teda-Lab I Eskilstuna AB: *See—*
Isaksson, Lars Goran Torsten, 3,862,521.

Tektronix, Inc.: *See—*
Nelson, Larry A.; and Crosby, Philip Stephen, 3,863,264.

Teledyne, Inc.: *See—*
Jules, Edwin; and Levedahl, William J., 3,863,081.

Teller, Daniel M.: *See—*
Sellsted, John H.; and Teller, Daniel M., 3,862,932.

Tellerman, Jacob, to Sun Chemical Corporation. Solid state crystal display having two isolated end cell regions. 3,862,795, Cl. 350-150.000.

Terashima, Hiroshi: *See—*
Kano, Kunio; Kayama, Naohiro; Terashima, Hiroshi; and Nakagiri, Yoshitaka, 3,862,885.

Terhorst, Harold, to Probat-Werke von Gimborn & Co. K.G. Pneumatic fractionating apparatus. 3,862,688, Cl. 209-139.00R.

Texaco Inc.: *See—*
Curtice, Beverly A.; and Harnsberger, Bobby G., 3,862,663.

Textron Inc.: *See—*
Stanaitis, Peter P., 3,862,458.

Thalmann, Armin, to Concast AG. Method and apparatus for continuous casting of metal with a considerably lower specific gravity of the strand in relation to the cast metal. 3,862,657, Cl. 164-86.000.

Thayer, Inc.: *See—*
Turski, Edward J., 3,862,455.

Theisen, Dieter: *See—*
Hombach, Rudolf; and Theisen, Dieter, 3,862,917.

Theiss, Russell V.: *See—*
Bielski, Edward T.; Lackey, Daryl L.; and Theiss, Russell V., 3,862,887.

Thermo Trim, Inc.: *See—*
Dahlberg, Kurt Gunnar, 3,862,817.

Thibodeau, Leslie Neil; and Smith, Lawrence Edward, to RCA Corporation. Television scanning linearity device. 3,863,184, Cl. 336-110.000.

Thompson, Richard R.; and Irwin, Malcolm F., to Pro-Tech Inc. Liquid sampling. 3,862,575, Cl. 73-421.00B.

Thumudo, Mario F., Jr. Extrusion method for equalizing frictional material drag. 3,863,001, Cl. 264-148.000.

Till, Henry R., to Xerox Corporation. Sheet reversing apparatus and a duplex reproducing apparatus employing same. 3,862,802, Cl. 355-23.000.

Timmerman, Hubert G.; and Catanzarite, Vincent O., to Specialty Products Development Corporation. Gas generator composition and method. 3,862,866, Cl. 149-21.000.

Tocco, Charles Thomas. Multi-projectile assembly. 3,862,600, Cl. 102-38.000.

Tofield, Bruce Cedric: *See—*
Damen, Theodore Charlouis; Tofield, Bruce Cedric; and Weber, Heinz Paul, 3,863,177.

Tokyo Seimitsu Co., Ltd.: *See—*
Egawa, Mitsuru; and Takano, Tomoteru, 3,863,165.

Tolg, Gunther: *See—*
Lautenschlager, Werner; Pahlke, Siegfried; and Tolg, Gunther, 3,862,892.

Tollrian, Herwig; and Krahl, Burghard, to U.S. Philips Corporation. Safety circuit for rapidly switching off oscillators, particularly transistor DC-DC converters, when the output voltages or output current exceed or full below the required values. 3,863,125, Cl. 321-11.000.

Tonomura, Akira; and Ohtaka, Tadashi, to Hitachi, Ltd. Electron gun device of field emission type. 3,863,095, Cl. 315-14.000.

Toriyama, Hisao: *See—*
Seki, Susumu; Noumi, Makoto; Takaoka, Tadashi; and Toriyama, Hisao, 3,863,059.

Totten, Cecil R. Jogging device. 3,862,752, Cl. 271-210.000.

Tousignant, William F.: *See—*
Decker, Dalton L.; Moore, Carl; and Tousignant, William F., 3,862,978.

Tovazhnyansky, Leonid Leonidovich: *See—*
Kovalenko, Leonid Maximovich; Tovazhnyansky, Leonid Leonidovich; Pertsev, Leonid Petrovich; Korobchansky, Ostap Alexandrovich; Chernonogov, Vladimir Sergeevich; and Sytnik, Vladimir Ilich, deceased, 3,862,661.

Toyo Boseki Kabushiki Kaisha: *See—*
Kano, Kunio; Kayama, Naohiro; Terashima, Hiroshi; and Nakagiri, Yoshitaka, 3,862,885.

Toyo Kogyo Co., Ltd.: *See—*
Uebayashi, Yoshitaka; Tashiro, Koji; and Anayama, Toshifumi, 3,862,561.

Tracor, Inc.: *See—*
Smith, Spurgeon E., 3,863,256.

Trcka, James S.; and Yeoman, David C., to Collins Radio Company. Backlighted display apparatus for preventing direct viewing of light sources. 3,863,246, Cl. 340-324.00R.

Trent, Dale W.: *See—*
Johnson, Frederick W.; Trent, Dale W.; and Escoffier, Raymond P., 3,863,161.

Treuner, Uwe: *See—*
Breuer, Herman; and Treuner, Uwe, 3,862,941.

Triangle Package Machinery Company: *See—*
Muskat, Robert L.; Connors, Robert H.; Klopfenstein, King L.; and Stachnik, Michael S., 3,862,666.

Triatex International AG fur Textile Forschung und Entwicklung: *See—*
Schwemmer, Martin; Bors, Hans; and Goetz, Albert, 3,862,553.

Trueblood, Richard Kent, to Ceramic Systems. Electroless gold plating on refractory metals. 3,862,850, Cl. 117-50.000.

TRW Inc.: *See—*
Martinez, John S.; Ógren, John R.; and Rutkowski, Eugene V., 3,863,176.
Meissinger, Hans F., 3,862,528.

Tsuchiya, Jiro. Bandsaw machines provided with an improved material holding vise. 3,862,583, Cl. 83-796.000.

Tsuneishi, Norihiro; Miyabayashi, Yoshiyuki; Aida, Hiroyuki; and Takizawa, Hideo, to Nissan Motor Company, Limited. Method of joining the edge portions of two sheets. 3,862,490, Cl. 29-505.000.

Tucker, Joseph M., III: *See—*
Gill, Stephen H.; Knell, Harvey A.; and Tucker, Joseph M., III, 3,862,697.

Tunick, Allen A.: *See—*
Sifniades, Stylianos; Fuhrmann, Robert; and Tunick, Allen A., 3,862,985.

Turner, James W., to United States of America, Air Force. System for the delayed dispersal of chaff in outer space. 3,863,254, Cl. 343-18.00B.

Turski, Edward J., to Thayer, Inc. Double action safety lock for crib sides. 3,862,455, Cl. 5-100.000.

Tygard, Charles M.; and Cameron, James H., to Spectrol Electronics Corporation. Combined potentiometer and switching structure. 3,863,039, Cl. 200-8.00A.

Uchytil, Gary, to Micro Science Associates. Filler masking of small apertures. 3,862,875, Cl. 161-38.000.

Uebayashi, Yoshitaka; Tashiro, Koji; and Anayama, Toshifumi, to Toyo Kogyo Co., Ltd. Apparatus for forming thorn-like projections. 3,862,561, Cl. 72-325.000.

Ueda, Minoru, to Nintendo Co., Ltd. Radio controlled toy automobile. 3,862,514, Cl. 46-244.00B.

Uesugi, Kyozo, to Minolta Camera Kabushiki Kaisha. Shifting device for compensating image performance of photographic camera lens in close-up photographing. 3,862,797, Cl. 350-255.000.

Ulderup, Jurgen: *See—*
Doden, Hans-Jurgen; and Ulderup, Jurgen, 3,862,807.

Ullman, Edwin F.: *See—*
Gottwald, Ken; Burkoth, Terry; and Ullman, Edwin F., 3,862,951.

Ulrich, Charles J.; and Tanaka, Akira, to American Safety Equipment Corporation. Safety belt device. 3,862,726, Cl. 242-107.400.

Ultrasonic Systems, Inc.: *See—*
Balamuth, Lewis, 3,862,630.

Underwood, Patrick Lee. Oxygen-hydrogen fuel use for combustion engines. 3,862,624, Cl. 123-119.00A.

Uni Wall Industries, Inc.: *See—*
Martine, Walter I., 3,862,530.

Union Carbide Corporation: *See—*
Hinman, Clyde D., 3,863,049.

Uniroyal, Inc.: *See—*
Cantor, Stephen E., 3,862,883.
Hageman, Howard A., 3,862,991.

United Aircraft Corporation: *See—*
Eckbreth, Alan C.; and Owen, Frank S., 3,863,103.
Emmons, Floyd R.; and Rannenberg, George C., 3,862,644.
Ferrar, Carl M., 3,863,178.
Heiney, Harold Gregory, 3,862,730.
Kupersmith, Bertram F.; and Casper, Clarence, Jr., 3,863,158.
Yntema, George Busey; Grant, David C., Jr.; and Warner, Richard T., 3,862,803.

United Aircraft Products, Inc.: *See—*
Fernandes, Joseph F., 3,862,549.

United States of America
Air Force: *See—*
Abshier, James O., 3,863,252.
Kang, George S.; and Berry, Allan E., 3,863,257.
Muir, Malcolm D., 3,863,131.
Turner, James W., 3,863,254.
Army: *See—*

Brandmayr, Ronald J.; and DiVita, Sam, 3,862,829.
Ewanizky, Theodore F., 3,863,105.
Navy: *See—*
Belohoubek, Erwin F., 3,863,100.
Bernaerts, Henry J., 3,862,811.
Boughnou, Thomas R.; Buss, Kenneth G.; and Frey, Charles E., 3,863,259.
Dildy, Clell A., Jr., 3,863,026.
Goo, Gee In, 3,863,179.
Hughes, Harold L., 3,862,930.
Johnson, Leo D., 3,863,149.
Kazantzis, George B.; and Nier, Richard E., 3,863,061.
Kornblith, Jeffrey S.; and Swedlow, Jerold L., 3,862,603.
Manning, Larry G., 3,862,602.
Meeker, George William, 3,863,132.
Stimler, Morton, 3,863,166.
Werle, Christian P. F., 3,863,142.
Wyatt, Theodore; and Swet, Charles J., 3,862,732.
U.S. Philips Corporation: *See—*
Bolhuis, Pieter Jan, 3,863,104.
Eshraghian, Kamran, 3,863,153.
Michels, Albertus Peter Johannes, 3,862,542.
Tollrian, Herwig; and Krahl, Burghard, 3,863,125.
Van Geenen, Johannes, 3,862,481.
Universite de Sherbrooke: *See—*
Deschenes, Pierre A.; Stephenne, Hubert; and Villeret, Michel, 3,863,248.
University of Mississippi, The: *See—*
Sam, Joseph, 3,862,937.
Upjohn Company, The: *See—*
Hester, Jackson B., Jr.; and Szmuszkovicz, Jacob, 3,862,956.
Pike, John E.; and Schneider, William P., 3,862,984.
Szmuskovicz, Jacob, 3,862,950.
Urami, Angelo, to McGraw-Edison Company. Holder for cartridge-type electric fuses. 3,863,190, Cl. 337-214.000.
Urani, Angelo, to McGraw-Edison Company. Holder for electric fuses. 3,863,189, Cl. 337-213.000.
Urry, Wilbert Herbert; and Mullenbach, Guy Towns, to Commercial Solvents Corporation. 4-Penten-2-yl 6-(4-pentenyl-β-resorcylate dibenzyl ether. 3,862,980, Cl. 260-473.00R.
Vacik, Jiri: *See—*
Wichterle, Otto; Kliment, Karel; Vacik, Jiri; Ott, Zdenek; Stol, Miroslav; and Dvorak, Jan, 3,862,452.
Valley Metallurgical Processing Co., Inc.: *See—*
Roczynski, Joseph P.; and Roczynski, Chester P., 3,862,815.
Vananrooy, John A.; and Kramer, Richard M., to Lambert Brake Corporation. Caliper disk brake having easily removable linings. 3,862,674, Cl. 188-73.300.
Van Benschoten, Peter J.; and Kilsdonk, Jan Albert, to Oak Industries Inc. Switch mechanism. 3,863,040, Cl. 200-67.0DB.
van Dorp, David Adriaan: *See—*
Heslinga, Lammert; Pabon, Hendrik Jacob Johannes; and van Dorp, David Adriaan, 3,862,972.
Van Fossen, Harvey G. Vibratory device for finishing parts with delivery chute. 3,862,519, Cl. 51-163.000.
Van Geenen, Johannes, to U.S. Philips Corporation. Method of manufacturing tubes provided with longitudinal grooves in inner wall and/or outer wall, and tubes manufactured by this method. 3,862,481, Cl. 29-157.30R.
Vangsness, Gordon A. Meter bar providing accommodation to variations in nipple spacing. 3,862,770, Cl. 285-30.000.
Van Gundy, Kenneth Warren. Chain positioner for 10-speed bicycle. 3,862,487, Cl. 29-270.000.
Van Kuik, Dirk J.: *See—*
Scheerhorn, Douglas; Van Kuik, Dirk J.; Faiks, Frederick S.; and Hodges, Ronald R., 3,862,785.
Vavrick, Oscar. Pocket gopher trap. 3,862,511, Cl. 43-61.000.
VDO Adolf Schindling GmbH: *See—*
Hahlganss, Gunther, 3,863,151.
Vecchione, John S.: *See—*
LaPointe, Gabriel M.; and Vecchione, John S., 3,862,712.
Veith, Werner: *See—*
Heynisch, Hinrich; Poeschl, Klaus; and Veith, Werner, 3,863,092.
Vernooy, Burton; and Kendall, Robert L., to T. D. Williamson, Inc. Pipeline pig. 3,862,497, Cl. 33-141.00G.
Vertical Company, The: *See—*
Loudin, Blaine H., 3,862,607.
Villeret, Michel: *See—*
Deschenes, Pierre A.; Stephenne, Hubert; and Villeret, Michel, 3,863,248.
Vogel, Georg. Sets of building blocks of different sizes. 3,862,512, Cl. 46-25.000.
Vogel, Ronald F., to Agridustrial Electronics, Inc. Multielectrode capacitive liquid level sensing system. 3,862,571, Cl. 73-304.00C.
Voigtlander, Wolfgang: *See—*
Kaiser, Fritz; Lubs, Hans Joachim; Schaumann, Wolfgang; and Voigtlander, Wolfgang, 3,862,931.
Vojir, Frank S.: *See—*
Collette, Richard L.; Vojir, Frank S.; and Watts, Roger E., 3,863,052.
Volkov, Vladislav Borisovich: *See—*
Vorms, Georgy Alfonsovich; Kuznetsov, Petr Ivanovich; and Volkov, Vladislav Borisovich, 3,862,821.
Vollmann, Heinrich: *See—*
Hohmann, Walter; Vollmann, Heinrich; Bien, Hans-Samuel; and Gehrke, Gunter, 3,862,967.
Von Praun, Ferdinand; and Kosswig, Kurt, to Chemische Werke Huels Aktiengesellschaft. Lightening the collar of olefin sulfonates. 3,862,983, Cl. 260-513.00R.
Von Waclawiczek, Herbert Ritter; and Ermisch, Klaus, to Fried Krupp Gesellschaft mit beschrankter Haftung. Method for producing steel. 3,862,834, Cl. 75-11.000.
Vora, Jitendra P.: *See—*
Emanuel, Alexander E.; and Vora, Jitendra P., 3,863,109.
Vorms, Georgy Alfonsovich; Kuznetsov, Petr Ivanovich; and Volkov, Vladislav Borisovich. Apparatus for atomization and combustion of fluid industrial wastes having low and variable calorific value. 3,862,821, Cl. 431-168.000.
Vyzkumny Ustav Bavlnarsky: *See—*
Kramenic, Zdenek; Zabrodsky, Zdenek; Didkova, Juna; Kralove, Hradec; and Imramovsky, Rudolf, 3,862,649.
Vyzkumny Ustav Bavlnarsky: *See—*
Holub, Josef; Lzicar, Josef; Dubanek, Jan; and Stech, Jaroslav, 3,862,647.
Langr, Jaroslav; Lzicar, Josef; Mateju, Vladimir; and Krulik, Jaroslav, 3,862,648.
W. R. Grace & Co.: *See—*
Cheavens, Thomas Henry; and Robert, Stewart, 3,862,960.
Fitch, Frederick T.; and Braun, Ann B., 3,862,908.
Waast, Bernard: *See—*
Garin, Arlette; and Waast, Bernard, 3,863,072.
Wachsmuth, Robert H.: *See—*
Smith, Elliott P.; and Wachsmuth, Robert H., 3,862,799.
Wacker-Chemie GmbH: *See—*
Nitzsche, Siegfried; Hittmair, Paul; Hechtl, Wolfgang; Wohlfarth, Ernst; and Mittermeier, Manfred, 3,862,919.
Wagner, Howard G., to Machlett Laboratories, Incorporated, The. Automatic system for precise collimation of radiation. 3,863,073, Cl. 250-402.000.
Wagner, Kuno: *See—*
Dietrich, Werner; Wagner, Kuno; Roegler, Manfred; Kleimann, Helmut; and Richert, Karl Hartwig, 3,862,973.
Wakahata, Yasuo: *See—*
Matsuura, Mikio; Iga, Atsushi; and Wakahata, Yasuo, 3,863,193.
Walker, Alexander D. R.: *See—*
Rode, France; Crowley, William L., Jr.; Walker, Alexander D. R.; and Cochran, David S., 3,863,060.
Walker, Darrell W., to Phillips Petroleum Company. Oxidative dehydrogenation catalysts. 3,862,997, Cl. 260-680.00E.
Walker, Richard John: *See—*
Foster, John; and Walker, Richard John, 3,862,920.
Wallace, Duane W., to Reed Tool Company. Scrape-type cutter for drill bits. 3,862,665, Cl. 175-383.000.
Ward, Harold R., to Eaton Corporation. Hydrostatic transmission control system. 3,862,668, Cl. 180-6.480.
Ward, Llyd G. Modular formed wire cardcage. 3,863,113, Cl. 317-101.0DH.
Ware, Gordon K., to Chicago Roller Skate Company. Roller skate construction with releasably, lockable and adjustable action screw. 3,862,763, Cl. 280-11.280.
Wargel, Stanley L.: *See—*
Habegger, Richard J.; and Wargel, Stanley L., 3,862,493.
Warner Electric Brake and Clutch Company: *See—*
Lander, Emil; Yackel, Richard A.; and Singh, Gurdial, 3,863,118.
Warner, Harlow L.: *See—*
Johnson, Wayne O.; Warner, Harlow L.; and Yih, Roy Y., 3,862,833.
Warner, Paul L., Jr. Sunscreening method containing 4-di (lower)alkylaminobenzamides. 3,863,007, Cl. 424-60.000.
Warner, Richard T.: *See—*
Yntema, George Busey; Grant, David C., Jr.; and Warner, Richard T., 3,862,803.
Watanabe, Katsujiro: *See—*
Mori, Toshihiro; Yamada, Takeo; and Watanabe, Katsujiro, 3,862,573.
Watts, Roger E.: *See—*
Collette, Richard L.; Vojir, Frank S.; and Watts, Roger E., 3,863,052.
Waxlax, Chester E., to Horix Manufacturing Company. Container filling device with flow control. 3,862,708, Cl. 222-444.000.
Wean United Inc.: *See—*
Miller, Paul W., 3,862,728.
Weatherford, Danny J. Boat for collecting oil slicks and other contaminants from the surface of water. 3,862,904, Cl. 210-242.00).
Weber, Heinz Paul: *See—*
Damen, Theodore Charlouis; Tofield, Bruce Cedric; and Weber, Heinz Paul, 3,863,177.
Webster, John David; and Jewell, Thomas John, to English Clays Lovering Pochin & Company Limited. Process for the production of polymer. 3,862,921, Cl. 260-77.5AA.
Weigle, Dieter: *See—*
Bahrle, Willy; and Weigle, Dieter, 3,862,588.
Weiler, Donald J.; Fritz, John H.; and Lewis, B. Frank, to Aurora Metal Corporation. Method and apparatus for vacuum casting of metal. 3,862,656, Cl. 164-63.000.
Weinstein, Martin: *See—*
Speirs, Kenneth K.; Weinstein, Martin; and Blize, Roy L., 3,862,851.
Weisang, Joseph-Edouard; Szabo, Georges; and Maurin, Jean, to Companie Francaise de Raffinage. Dehydration catalysts, particularly for the dehydration of diols. 3,862,964, Cl. 252-437.000.

Weisinger, Martin Donald, to General Dynamics Corporation. Method of manufacturing boron-aluminum composite tubes with integral end fittings. 3,862,489, Cl. 29-476.500.

Welch, John A., to General Tire and Rubber Company, The. Multidirectional elastomeric expansion joint. 3,862,810, Cl. 404-66.000.

Wells Fargo & Company: *See—*
Gernetzke, David W., 3,862,694.

Welstead, William John, Jr., to A. H. Robins Company, Incorporated. 2-(Omego-substituted alkoxy) benzophenones. 3,862,982, Cl. 260-482.00C.

Wennerblom, Bengt Axel; and Jorgensen, Sven Erik, to Svenska Cellulosa Aktiebolaget. Method of recovering organic material from aqueous solutions thereof. 3,862,901, Cl. 210-28.000.

Wenning, William F., Jr.; and Blanco, Louis A., to Ceramic Color & Chemical Manufacturing Co. SnO_2 containing lead silicate glass having a low melting point. 3,862,844, Cl. 106-49.000.

Wentworth, Fred A., Jr., to WSJ Catalyzers, Inc. Fuel catalyzer. 3,862,819, Cl. 431-4.000.

Werle, Christian P. F., to United States of America, Navy. Magnetic fluxmeter. 3,863,142, Cl. 324-43.00R.

Werner, Lothar; and Schneider, Werner, to Henkel & Cie GmbH. Shaped washing agents based on synthetic tensides. 3,862,965, Cl. 252-555.000.

Wernitz, Peter, to Dr. Hans Boekels & Co. Circuit for use in connection with electric measured values indicators, especially electromechanical scales. 3,863,152, Cl. 324-128.000.

West Laboratories, Inc.: *See—*
Goldberg, Raymond; and Shaw, Irving F., 3,862,654.

Western Geophysical Company of America: *See—*
Savit, Carl H., 3,863,058.

Westinghouse Electric Corporation: *See—*
Rostron, Joseph R.; and Dropik, Sylvester J., 3,863,041.

Westlake, John Henry: *See—*
Cebuliak, Steve E.; Leach, Clifford Harvey; and Westlake, John Henry, 3,863,150.

Wetzell, William W. Cap securing means for a container. 3,862,699, Cl. 215-216.000.

Wheeler, Robert H.; and Ralston, Richard W. Quantum mechanical mosfet infrared radiation detector. 3,863,070, Cl. 250-339.000.

White, Matthew B.: *See—*
Doyle, Walter M.; and White, Matthew B., 3,863,064.

White, Nicholas J.: *See—*
Graafsma, Richard S.; Nehrig, R. Harlan; and White, Nicholas J., 3,862,743.

Wibom, Gustaf Hakan Oskar, to AGA Aktiebolag. Plumb- or inclination-setting device. 3,862,500, Cl. 33-333.000.

Wichterle, Otto; Kliment, Karel; Vacik, Jiri; Ott, Zdenek; Stol, Miroslav; and Dvorak, Jan, to Ceskoslovenska akademie ved. Hydrogel substitutes for tubular somatic organs. 3,862,452, Cl. 3-1.000.

Widder, Rudi: *See—*
Distler, Harry; Widder, Rudi; and Pommer, Ernst-Heinrich, 3,862,966.

Widdifield, Garth E. Apparatus for mounting hair. 3,862,453, Cl. 3-1.000.

Wigal, Voorhis F.: *See—*
McManus, Hugh D.; Wigal, Voorhis F.; and Long, Robert S., 3,862,865.

Wilcox, Gale F.: *See—*
Korell, Donald D.; and Wilcox, Gale F., 3,862,789.

Wilcoxon, Kenneth H. Device to facilitate uniform application of zip code indicia to envelopes. 3,863,051, Cl. 235-61.12R.

Wiley, Robert Emerson: *See—*
Coniglio, James John; and Wiley, Robert Emerson, 3,863,116.

Williams, Brown F.: *See—*
Kosonocky, Walter Frank; and Williams, Brown F., 3,863,065.

Williams, Garnet Montague Eveleigh, to Ferraris Development and Engineering Company Limited. Peak flow meters. 3,862,628, Cl. 128-2.080.

Williams, Malcolm, to Lucas Electrical Company Limited, The. Power supply circuits incorporating voltage regulation. 3,863,139, Cl. 323-17.000.

Wilmarth, Paul Carleton: *See—*
Seibert, William Louis; and Wilmarth, Paul Carleton, 3,863,164.

Wilson, Richard A.; Mussinan, Cynthia; Katz, Ira; Giacino, Christopher; Sanderson, Anne; and Shuster, Edward J., to International Flavors & Fragrances Inc. Flavoring and aromatising with a five or six membered heterocyclic dithio compound. 3,863,013, Cl. 426-65.000.

Wilwerding, Dennis J., to Honeywell Inc. Voltage monitoring controlling and protecting apparatus employing programmable unijunction transistor. 3,863,128, Cl. 320-21.000.

Wirth, Wayne M., to Minnesota Mining and Manufacturing Company. Locking reel container. 3,862,555, Cl. 70-63.000.

Witte, Wolfgang Wilhelm: *See—*
Tamm, Rolf Gunter; and Witte, Wolfgang Wilhelm, 3,862,805.

Wohlfarth, Ernst: *See—*
Nitzsche, Siegfried; Hittmair, Paul; Hechtl, Wolfgang; Wohlfarth, Ernst; and Mittermeier, Manfred, 3,862,919.

Wolansky, John, to Eaton Corporation. Drop center drive steer axle. 3,862,667, Cl. 180-43.00R.

Wolfangel, Robert G., to Mallinckroft Chemical Works. Denatured macroprotein with divalent tin for tagging with technetium-99m and method of preparation. 3,863,004, Cl. 424-1.000.

Wolfe, Roger Ward: *See—*
Kuchinsky, Saul; Wolfe, Roger Ward; Maloney, Thomas Christopher; and Hennessey, William Michael, 3,862,476.

Wood, David W., to General Electric Company. Beam forming of multiple signals. 3,863,199, Cl. 340-3.00R.

Woods, Peter Ghormley: *See—*
Farrell, Sherman R.; Demeter, Laszlo; and Woods, Peter Ghormley, 3,863,163.

World Patent Development Corporation: *See—*
Hayworth, Curtis B., 3,862,916.

Worman, William E.: *See—*
King, Robert M.; and Worman, William E., 3,862,781.

WSJ Catalyzers, Inc.: *See—*
Wentworth, Fred A., Jr., 3,862,819.

Wyatt, Theodore; and Swet, Charles J., to United States of America, Navy. Combined fluid flywheel and propulsion system for spacecraft. 3,862,732, Cl. 244-165.000.

Xerox Corporation: *See—*
Bostic, Michael E., 3,863,143.
Komp, Richard J., 3,862,801.
Pilato, Louis A.; Cressman, Paul J.; and Limburg, William W., 3,862,841.
Sato, Masamichi; and Fukushima, Osamu, 3,862,618.
Till, Henry R., 3,862,802.

Yackel, Richard A.: *See—*
Lander, Emil; Yackel, Richard A.; and Singh, Gurdial, 3,863,118.

Yamada, Takeo: *See—*
Mori, Toshihiro; Yamada, Takeo; and Watanabe, Katsujiro, 3,862,573.

Yamade, Takashi: *See—*
Mishima, Nobuo; Yamaguchi, Takeshi; Yoshizawa, Sozaburo; Kobayashi, Torao; and Yamade, Takashi, 3,863,137.

Yamaguchi, Takeshi: *See—*
Mishima, Nobuo; Yamaguchi, Takeshi; Yoshizawa, Sozaburo; Kobayashi, Torao; and Yamade, Takashi, 3,863,137.

Yamakami, Yasumasa, to Nisshin Oil Mills, Ltd., The. Process for the preparation of edible fibers with excellent masticability. 3,863,016, Cl. 426-276.000.

Yamamoto, Shinji: *See—*
Oka, Mitsunori; Yamamoto, Shinji; and Kadota, Shozo, 3,863,218.

Yamaoka, Goichi; and Onikubo, Kazutoshi, to Kabushiki Kaisha Suwa Seikosha. Charging apparatus and method for an alkali storage battery. 3,863,130, Cl. 320-44.000.

Yamatake-Honeywell Company Limited: *See—*
Kamiyamaguchi, Masaru; Nakagawa, Kazuyoshi; and Nishimura, Masana, 3,863,241.

Yamauchi, Hiroyuki. Battery charger. 3,863,129, Cl. 320-31.000.

Yamazaki, Eiichi: *See—*
Hurukawa, Toshio; Yamazaki, Eiichi; and Kanai, Hiromi, 3,863,091.

Yasuda, Hajime: *See—*
Osawa, Akira; and Yasuda, Hajime, 3,863,220.

Yasukatsu, Fujinaka, to Matsushita Electric Industrial Co., Ltd. Tape cartridge locking and ejecting mechanism. 3,863,267, Cl. 360-93.000.

Yates, James E.; and Motz, Kaye L., to Continental Oil Company. Process for condensation of alcohols. 3,862,993, Cl. 260-642.00C.

Yates, James E., to Continental Oil Company. Process for condensation of alcohols. 3,862,994, Cl. 260-642.00C.

Yeoman, David C.: *See—*
Trcka, James S.; and Yeoman, David C., 3,863,246.

Yih, Roy Y.: *See—*
Johnson, Wayne O.; Warner, Harlow L.; and Yih, Roy Y., 3,862,833.

Yntema, George Busey; Grant, David C., Jr.; and Warner, Richard T., to United Aircraft Corporation. Differential laser gyro system. 3,862,803, Cl. 356-106.0LR.

Yoshida Kogyo Kabushiki Kaisha: *See—*
Ebata, Hiroyuki, 3,862,474.

Yoshitani, Yutaka; and Hamazaki, Yoshiharu, to Nippon Steel Corporation; and Mitsubishi Denki Kabushiki Kaisha. Strip reduction measurement device and control system using the same for rolling mill. 3,862,558, Cl. 72-11.000.

Yoshizawa, Sozaburo: *See—*
Mishima, Nobuo; Yamaguchi, Takeshi; Yoshizawa, Sozaburo; Kobayashi, Torao; and Yamade, Takashi, 3,863,137.

Young, Ben. Clam harvester. 3,862,502, Cl. 37-55.000.

Yueh, Mao H., to General Mills, Inc. Sea food products. 3,863,017, Cl. 426-376.000.

Zabrodsky, Zdenek: *See—*
Kramenic, Zdenek; Zabrodsky, Zdenek; Didkova, Juna; Kralove, Hradec; and Imramovsky, Rudolf, 3,862,649.

Zajac, Theodore S.; and George, Hal E., to Parker-Hannifin Corporation. Hydraulic motor. 3,862,587, Cl. 91-477.000.

Zajacek, John G.: *See—*
Sheng, Ming N.; Zajacek, John G.; and Baker, Thomas N., III, 3,862,961.

Zappe, Hans H., to International Business Machines Corporation. Josephson device parametrons. 3,863,078, Cl. 307-88.00P.

Zeigerson, Esther; and Bloch, Moshe Rudolf, to State of Isreal, Ministry of Development, The. Use of brominated sulfurated lignin for flameproofing inflammable materials and for the production of flameproof bonded articles. 3,862,854, Cl. 117-136.000.

Zeitlin, Alexander. Apparatus and method for hydrostatic extrusion. 3,862,557, Cl. 72-9.000.

Zellweger, Ltd.: *See—*
Felix, Ernst; and Feller, Peter, 3,862,473.

Zimmermann, Hans-Georg: *See*—
Stolting, Klaus; Zimmermann, Hans-Georg; and Klos, Ewald, 3,862,594.
Zimmermann, Joseph J., to GTE Automatic Electric Laboratories Incorporated. Tape position indicator means for telephone answering apparatus. 3,863,029, Cl. 179-6.00E.
Zoecon Corporation: *See*—
Hendrick, Clive A., 3,862,970.
Henrick, Clive A., 3,862,969.
Zuern, Ludwig: *See*—
Fried, Michael; Moeller, Rolf; Zuern, Ludwig; and Stahnecker, Erhard, 3,862,915.
Zupancic, Heinz-Ulrich: *See*—
Berndt, Heinz; Simic, Dragomir; and Zupancic, Heinz-Ulrich, 3,862,912.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 28TH DAY OF JANUARY, 1975

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Baldwin, David J., by Sybron Corp. Cleaning of the interior of storage tanks. Re. 28,320, 1–28–75, Cl. 134—167.

Chicago Lock Co.: *See*—
Kerr, William J. Re. 28,319.

Goodrich, John J., to St. Regis Paper Co. Guesseted type bags. Re. 28,317, 1–28–75, Cl. 229—55.

Goodrich, John J., to St. Regis Paper Co. Guesseted type bags. Re. 28,318, 1–28–75, Cl. 229—55.

Greene, Clarence K. Hydraulic drive for multi-axle vehicles. Re. 28,324, 1–28–75, Cl. 180—22.

Gulf Research & Development Co.: *See*—
Mori, Ernest A. Re. 28,322.

Hardware & Industrial Tool Co., Inc.: *See*—
Vosbikian, Joseph, and J. T. Re. 28,321.

Kerr, William J., to Chicago Lock Co. Axial pin tumbler lock assembly and combination reset key therefor. Re. 28,319, 1–28–75, Cl. 70—363.

Lever Brothers Co.: *See*—
White, Leroy A. Re. 28,325.

Mori, Ernest A., to Gulf Research & Development Co. Floating rig motion compensator. Re. 28,322, 1–28–75, Cl. 175—5.

St. Regis Paper Co.: *See*—
Goodrich, John J. Re. 28,317.
Goodrich, John J. Re. 28,318.

Silva, Rene R. Continuous clarification-filtration method. Re. 28,323, 1–28–75, Cl. 210—44.

Sybron Corp.: *See*—
Beldwin, David J. Re. 28,320.

Vosbikian, James T.: *See*—
Vosbikian, Joseph, and J. T. Re. 28,321.

Vosbikian, Joseph, and J. T., to Hardware & Industrial Tool Co., Inc. Cabinet with jam switch and alarm system. Re. 28,321, 1–28–75, Cl. 340—274.

White, Leroy A., to Lever Brothers Co. Method of chelating with an ether-group-containing sequestering agent. Re. 28,325, 1–28–75, Cl. 210—58.

LIST OF PLANT PATENTEES

Cagle, Daniel J.: *See*—
Efird, Maggie L. 3,676.

Efird, Maggie L., 50% to Daniel J. Cagle. Azalea plant. 3,676, 1–28–75, Cl. 55.

Jackson & Perkins Co.: *See*—
Warriner, William A. 3,677.

Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,677, 1–28–75, Cl. 17.

LIST OF DESIGN PATENTEES

Aldred, T. Eric. Elevator toilet seat for invalids. 234,202, 1–28–75, Cl. D23—71.

Alfonso, Louis. Mobile sign. 234,231, 1–28–75, Cl. D96—12.

Anderson, John W., to Hutch Sporting Goods, Inc. Basketball. 234,213, 1–28–75, Cl. D34—15.

American Standard Inc.: *See*—
Stairs, Henry M., Jr. 234,199.
Stairs, Henry M., Jr. 234,201.

Amerock Corp.: *See*—
Tegner, Raymond U. H. 234,170.
Tegner, Raymond U. H. 234,173.
Tegner, Raymond U. H. 234,174.
Tegner, Raymond U. H. 234,184.

Applichian Electronic Instruments, Inc.: *See*—
Nickell, Lawrence C., L. C., Whitt, Eggleston, and Hanger. 234,216.

Beaton, Rex. L.: *See*—
Mann, Douglas G., and Beaton. 234,182.

Berkline Corp., The: *See*—
Long, Stapleton. 234,171.

Bizovi, Dan D. Golf club head. 234,209, 1–28–75, Cl. D34—5.

Buechler, Lawrence W., to Milwaukee Vale Co. Valve. 234,200, 1–28–75, Cl. D23—19.

Byrum, Mary O. Warming tag or similar article. 234,232, 1–28–75, Cl. D96—13.

Cassin, Gilbert S., to Les Parfums de Molyneux, S.A. Bottle package. 234,187, 1–28–75, Cl. D9—12.

Cenco Medical Supply Corp.: *See*—
Spiegel, Ronald E. 234,228.

Cincinnati Biomedical, Inc.: *See*—
Miller, Gale W., and Geraci. 234,204.

Clambake International, Inc.: *See*—
Mann, Douglas G., and Beaton. 234,182.

Cline Industries: *See*—
Cline, Ted L. 234,194.

Cline, Ted. L., to Cline Industries. Bumper for trucks. 234,194, 1–28–75, Cl. D12—169.

Coats & Clark, Inc.: *See*—
Langston, Charles R., Jr. 234,186.

Cook, Raymon W. Golf putter head. 234,206, 1–28–75, Cl. D34—5.

Cook, Raymon W. Golf putter head. 234,207, 1–28–75, Cl. D34—5.

Cook, Raymon W. Golf putter head. 234,208, 1–28–75, Cl. D34—5.

Daher, Theodore G., to General Electric Co. Clock or similar article. 234,190, 1–28–75, Cl. D10—6.

Dart Container Corp.: *See*—
Dart, William A., and Uridge. 234,180.

Dart, William A., and L. T. Uridge, to Dart Container Corp. Bowl. 234,180, 1–28–75, Cl. D7—23.

Davis, Walter L. Clip for holding two tennis rackets together. 234,185, 1–28–75, Cl. D8—246.

Deschamps, Robert L., and R. A. Massaccesi, to All-Steel Inc. Office furniture chair seat back. 234,179, 1–28–75, Cl. D6—197.

Donato, Anthony C., to Lightoller Inc. Spotlight. 234,218, 1–28–75, Cl. D48—20.

Donato, Anthony C., to Lightoller Inc. Spotlight. 234,219, 1–28–75, Cl. D48—20.

Donato, Anthony C., to Lightoller Inc. Spotlight. 234,220, 1–28–75, Cl. D48—20.

DuBois, Ralph L. Cover for shower head. 234,198, 1–28–75, Cl. D23—36.

Duino, Louis A.: *See*—
Menendez, Julius, and Duino. 234,210.

ESB Inc.: *See*—
Oakley, Daniel C., Rhoades, and Schmidt. 234,222.

Eastman Kodak Co.: *See*—
McClare, Andrew V. 234,223.

Eggleston, Ernest L.: *See*—
Nickell, Lawrence C., L. C., Whitt, Eggleston, and Hanger. 234,216.

Felske, Arthur M., to General Electric Co. Timer or similar article. 234,215, 1–28–75, Cl. D42—7.

Ferguson, Edward M.: *See*—
Morin, Marius J., Ferguson, Henderson, and Jenkins, Jr. 234,212.

Gaumont, Monte: *See*—
Gaumont, Irving, and Monte. 234,229.

Gaumont, Irving and Monte. Tongue scraper. 234,229, 1–28–75, Cl. D83—12.

Gaylord Bros., Inc.: *See*—
Hudson, Harold L., Mt. Pleasant, and Scherzer. 234,169.
Hudson, Harold L., Mt. Pleasant, and Scherzer. 234,176.

General Electric Co.: *See*—
Daher, Theodore G. 234,190.
Felske, Arthur M. 234,215.

Geraci, James L.: *See*—
Miller, Gale W., and Geraci. 234,204.

Gillette Co., The: *See*—
Malm, Curtis L., and Loewenthal. 234,226.

Hanger, Robert E.: *See*—
Nickell, Lawrence C., L. C., Whitt, Eggleston, and Hanger. 234,216.

Haswell, Robert F. Bottle holder. 234,181, 1–28–75, Cl. D7—70.

Henderson, Richard E.: *See*—
Morin, Marius J., Ferguson, Henderson, and Jenkins. 234,212.

Hesselgram, Sven-Gunnar. Packing tray for dental preparation or the like. 234,189, 1–28–75, Cl. D9—242.

Hudson, Harold L., G. G. Mt. Pleasant, and R. K. Scherzer, to Gaylord Bros., Inc. Rotary displayer for paperback books. 234,169, 1–28–75, Cl. D6—24.

Hudson, Harold L., G. G. Mt. Pleasant, and R. K. Scherzer, to Gaylord Bros., Inc. Display module for paperback books. 234,176, 1–28–75, Cl. D6—139.
Hutch Sporting Goods, Inc.: *See*—
Anderson, John W. 234,213.
Ito, Kunio, to Pentel Kabushiki Kaisha. Ball point pen. 234,225, 1–28–75, Cl. D74—17.
Jenkins, Gale D., Jr.: *See*—
Morin, Marius J., Ferguson, Henderson, and Jenkins. 234,212.
Johnson, Darrell M. Font of type. 234,224, 1–28–75, Cl. D64—12.
Keller, Huey T. Dresser or the like. 234,177, 1–28–75, Cl. D6—154.
Keller, Huey T. Armoire or similar article. 234,178, 1–28–75, Cl. D6—164.
Kemnitzer, Ronald B., to Sunbeam Corp. Combined dial and hand for a clock. 234,193, 1–28–75, Cl. D10—124.
Kohner Bros., Inc.: *See*—
Stubbmann, Albert. 234,211.
Lacour, Lair L. Doll. 234,205, 1–28–75, Cl. 34—4.
Langston, Charles R., Jr., to Coats & Clark, Inc. Ring traveller. 234,186, 1–28–75, Cl. D8—248.
Les Parfums de Molynex, S.A.: *See*—
Cassin, Gilbert S. 234,187.
Lieberman, Samuel, to Eugene Shannon. Water tap filter. 234,197, 1–28–75, Cl. D23—4.
Lightoller Inc.: *See*—
Donato, Anthony C. 234,218.
Donato, Anthony C. 234,219.
Donato, Anthony C. 234,220.
Loewenthal, Henry J.: *See*—
Malm, Curtis L., and Loewenthal. 234,226.
Long, Stapleton, to The Berkline Corp. Seat. 234,171, 1–28–75, Cl. D6—71.
Madrid, Arnold O., assors. 90% to Might: *See*—
Might, Jack, and Madrid. 234,191.
Madrid, Arnold O.: *See*—
Might, Jack, and Madrid. 234,191.
Malm, Curtis L., and H. J. Loewenthal, to The Gillette Co. Mechanical pencil. 234,226, 1–28–75, Cl. D74—24.
Malnar, Joseph A. Stucco paint scraper. 234,183, 1–28–75, Cl. D7—184.
Mann, Douglas G., and R. L. Beaton, to Clambake International Inc. Lobster eating utensil. 234,182, 1–28–75, Cl. D7—105.
Massaccesi, Raymond A.: *See*—
Deschamps, Robert L., and Massaccesi. 234,179.
Mattel, Inc.: *See*—
Morin, Marius J., Ferguson, Henderson, and Jenkins. 234,212.
Maxwell, James D. Fish lure body. 234,195, 1–28–75, Cl. D22—27.
McClare, Andrew V., to Eastman Kodak Co. Rotary microfilmer. 234,223, 1–28–75, Cl. D61—1.
McEvoy, Harry K. Throwing knife. 234,214, 1–28–75, Cl. D34—15.
Menendez, Julius, and L. A. Duino. Practice mat for golfers. 234,210, 1–28–75, Cl. D34—5.
Might, Jack, and A. O. Madrid, to said Madrid assors. 90% to said Might. Flag or similar article. 234,191, 1–28–75, Cl. D10—109.
Miller, Gale W., and J. L. Geraci, to Cincinnati Biomedical Inc. Unitary fastener for medical and surgical applications. 234,204, 1–28–75, Cl. D32—1.
Milwaukee Vale Co.: *See*—
Buechler, Lawrence W. 234,200.
Morin, Marius J., E. M. Ferguson, R. E. Henderson, and G. D. Jenkins, Jr., to Mattel, Inc. Toy airplane. 234,212, 1–28–75, Cl. D34—15.
Mt. Pleasant, Gregory G.: *See*—
Hudson, Harold L., Mt. Pleasant, and Scherzer. 234,169.
Hudson, Harold L., Mt. Pleasant, and Scherzer. 234,176.
Muffoletto, Carl V. Multi-frame X-ray display. 234,227, 1–28–75, Cl. D83—1.
Nickell, Larry C.: *See*—
Morin, Marius J., Ferguson, Henderson, and Jenkins, Jr. 234,216.
Nickell, Lawrence C., L. C. Nickell, W. T. Whitt, E. L. Eggleston, and R. E. Hanger, to Applichian Electronic Instruments, Inc. Adjustable mounting structure for detector heads for inspecting needles of circular knitting machines. 234,216, 1–28–75, Cl. D47—5.
Oakley, Daniel C., N. K. Rhoades, and A. R. Schmidt, to ESB Inc. Electric lantern. 234,222, 1–28–75, Cl. D48—24.
Opert, Stephen P. Clock face or the like. 234,192, 1–28–75, Cl. D10—123.
Otis, George. Packaging container for drink ingredients or the like. 234,188, 1–28–75, Cl. D9—222.
Papst-Motoren KG: *See*—
Wrobel, Gunter. 234,203.
Pentel Kabushiki Kaisha: *See*—
Ito, Kunio. 234,225.
Ranney, Daniel R. Display stand. 234,172, 1–28–75, Cl. D6—85.
Rhoades, Nolan K.: *See*—
Oakley, Daniel C., Rhoades, and Schmidt. 234,222.
Rose, Millard F., Jr., to Ruby F. Williams, 50%. Fishing lure simulating a squid. 234,196, 1–28–75, Cl. D22—27.
Schellhouse, Edwin J. Razor blade. 234,175, 1–28–75, Cl. D6—88.
Scherzer, Robert K.: *See*—
Hudson, Harold L., Mt. Pleasant, and Scherzer. 234,169.
Hudson, Harold L., Mt. Pleasant, and Scherzer. 234,176.
Schmidt, Arthur R.: *See*—
Oakley, Daniel C., Rhoades, and Schmidt. 234,222.
Shannon, Eugene: *See*—
Lieberman, Samuel. 234,197.
Spiegel, Ronald E., to Genco Medical Supply Corp. Syringe. 234,228, 1–28–75, Cl. D83—12.
Sporn, Walter. Hair brush. 234,168, 1–28–75, Cl. D4—35.
Stairs, Henry M., Jr., to American Standard Inc. Single bowl sink. 234,199, 1–28–75, Cl. D23—58.
Stairs, Henry M., Jr., to American Standard Inc. Double bowl sink. 234,201, 1–28–75, Cl. D23—62.
Stubbmann, Albert, to Kohner Bros., Inc. Checker. 234,211, 1–28–75, Cl. D34—5.
Sunbeam Corp.: *See*—
Kemnitzer, Ronald B. 234,193.
Tegner, Raymond U. H., to Amerock Corp. Soap dish holder. 234,170, 1–28–75, Cl. D6—89.
Tegner, Raymond, U. H., to Amerock Corp. Self-standing soap dish holder. 234,173, 1–28–75, Cl. D6—89.
Tegner, Raymond U. H., to Amerock Corp. Tissue holder. 234,174, 1–28–75, Cl. D6—97.
Tegner, Raymond U. H., to Amerock Corp. Escutcheon for hardware. 234,184, 1–28–75, Cl. D8—179.
Upchurch, William D. Lamp or the like. 234,221, 1–28–75, Cl. D48—20.
Uridge, Laurence T.: *See*—
Dart, William A., and Uridge. 234,180.
Whitt, William T.: *See*—
Nickell, Lawrence C., L. C., Whitt, Eggleston, and Hanger. 234,216.
Williams, Ruby F.: *See*—
Rose, Millard F., Jr. 234,196.
Wolfard, Jon. Candle holder. 234,217, 1–28–75, Cl. D48—2.
Wrobel, Gunter, to Papst-Motoren GK. Blower. 234,203, 1–28–75, Cl. D23—162.
Zahlman, Charles C. Hot water dispenser. 234,230, 1–28–75, Cl. D94—3.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 28, 1975

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
209 3,862,451

CLASS 3
1 3,862,452
3,862,453

CLASS 5
47 3,862,454
100 3,862,455

CLASS 8
137 3,862,822
3,862,823

CLASS 9
7 3,862,456

CLASS 10
106 3,862,457
155A 3,862,458

CLASS 15
1.7 3,863,237
21D 3,862,459
97R 3,862,460
164 3,862,461
182 3,862,462
3,862,463
217 3,862,464
250.42 3,862,465
320 3,862,466
340 3,862,467
341 3,862,468
357 3,862,469

CLASS 16
128R 3,862,470

CLASS 17
45 3,862,471

CLASS 19
145.5 3,862,472
240 3,862,473

CLASS 23
253TP 3,862,824

CLASS 24
205.11F 3,862,474

CLASS 28
28 3,862,475

CLASS 29
25.16 3,862,476
25.35 3,862,477
95R 3,862,478
155R 3,862,479
156.4R 3,862,480
157.3R 3,862,481
200B 3,862,485
203DT 3,862,482
208B 3,862,486
257 3,862,483
270 3,862,487
472.3 3,862,484
476.5 3,862,489
492 3,862,488
505 3,862,490
593 3,862,491
596 3,862,492

CLASS 30
289 3,862,494
294 3,862,495

CLASS 33
124 3,862,496
141G 3,862,497
174S 3,862,498
312 3,862,499
333 3,862,500

CLASS 35
2 3,862,501

CLASS 37
55 3,862,502

CLASS 38
30 3,862,503

CLASS 40
106.53 3,862,504
132R 3,862,505
325 3,862,506

CLASS 43
4 3,862,507
17 3,862,508
17.5 3,862,509
42.14 3,862,510
61 3,862,511

CLASS 44
62 3,862,825

CLASS 46
25 3,862,512
119 3,862,513
244B 3,862,514

CLASS 49
478 3,862,515

CLASS 51
21FP 3,862,516
91R 3,862,517
99 3,862,518
163 3,862,519
170MT 3,862,520
273 3,862,521
400 3,862,522

CLASS 52
27 3,862,523
36 3,862,524
64 3,862,525
70 3,862,526
94 3,862,527
108 3,862,528
199 3,862,529
281 3,862,530
300 3,862,531
521 3,862,532
643 3,862,533
745 3,862,534
753W 3,862,535

CLASS 53
246 3,862,536

CLASS 55
112 3,862,826
238 3,862,827

CLASS 56
9 3,862,537
328R 3,862,538
504 3,862,539

CLASS 60
290 3,862,540
358 3,862,541
517 3,862,542
530 3,862,543
546 3,862,544
641 3,862,545

CLASS 62
6 3,862,546
246 3,862,547
294 3,862,548
419 3,862,549

CLASS 63
29R 3,862,550

CLASS 64
19 3,862,551

CLASS 65
29 3,862,828
32 3,862,829
58 3,862,830
60 3,862,831

CLASS 66
84A 3,862,552

CLASS 68
15 3,862,553
22R 3,862,554

CLASS 70
63 3,862,555
363 Re.28,319
416 3,862,556

CLASS 71
92 3,862,832
121 3,862,833

CLASS 72
9 3,862,557
11 3,862,558
205 3,862,559
252 3,862,560
325 3,862,561
380 3,862,562
403 3,862,563
405 3,862,564
448 3,862,565
468 3,862,566
469 3,862,567

CLASS 73
32A 3,862,568
88.5R 3,862,569
146 3,862,570
304C 3,862,571
328 3,862,572
342 3,862,573
343R 3,862,574
421B 3,862,575
432R 3,862,576
3,862,578

CLASS 74
89.2 3,862,579
432 3,862,577
577S 3,862,580
759 3,862,581

CLASS 75
11 3,862,834
68C 3,862,835
84 3,862,836
96 3,862,837
134C 3,862,838
135 3,862,839
200 3,862,840

CLASS 81
168 3,862,582

CLASS 83
796 3,862,583

CLASS 89
1.8 3,862,584

CLASS 90
2 3,862,585
11F 3,862,586

CLASS 91
477 3,862,587
486 3,862,588
487 3,862,589

CLASS 92
163 3,862,590

CLASS 93
94R 3,862,591

CLASS 96
1R 3,862,841
22 3,862,842
76R 3,862,843

CLASS 100
4 3,862,592
53 3,862,593
95 3,862,594
100 3,862,595
219 3,862,596

CLASS 101
269 3,862,598
367 3,862,597

CLASS 102
38 3,862,599
3,862,600
49.3 3,862,601
70.2R 3,862,602
93 3,862,603

CLASS 105
61.5 3,862,604
151 3,862,605
167 3,862,606
486 3,862,607

CLASS 106
49 3,862,844
59 3,862,845
73.1 3,862,846

CLASS 110
8C 3,862,608
8R 3,862,609

CLASS 112
121.11 3,862,610
121.2 3,862,493
222 3,862,611

CLASS 114
56 3,862,612
102 3,862,613

CLASS 116
135 3,862,615

CLASS 117
8 3,862,847
37LE 3,862,848
3,862,849
50 3,862,850
70C 3,862,851
106A 3,862,852
111R 3,862,853
136 3,862,854
161LN 3,862,855
201 3,862,856
3,862,857
3,862,930
215 3,862,858
3,862,859
239 3,862,860

CLASS 118
6 3,862,616
213 3,862,617
637 3,862,618
3,862,619

CLASS 119
17 3,862,620
75 3,862,621

CLASS 123
8.13 3,862,622
8.35 3,862,623
119A 3,862,624
148DC 3,862,625

CLASS 124
17 3,862,626

CLASS 128
2.06E 3,862,627
3,862,633
2.08 3,862,628
24A 3,862,630
24R 3,862,629
92B 3,862,631
132D 3,862,632
284 3,862,634
351 3,862,635
419D 3,862,636

CLASS 132
40 3,862,637
53 3,862,638
112 3,862,639

CLASS 134
167R Re.28,320

CLASS 136
26 3,862,861
148 3,862,862

CLASS 137
1 3,862,640
75 3,862,641
354 3,862,642
486 3,862,644
625.63 3,862,643
625.69 3,862,645

CLASS 138
104 3,862,646

CLASS 139
12 3,862,647
3,862,648
3,862,649
91 3,862,650

CLASS 144
3K 3,862,651
34E 3,862,652
208J 3,862,653

CLASS 148
9.5 3,862,749
11.5R 3,862,863

CLASS 149
19.8 3,862,864
19.91 3,862,865
21 3,862,866

CLASS 150
52R 3,862,654

CLASS 156
62.2 3,862,867
244 3,862,868
3,862,869
273 3,862,870
415 3,862,871
435 3,862,872
500 3,862,873

CLASS 160
172 3,862,655

CLASS 161
36 3,862,874
38 3,862,875
44 3,862,876
57 3,862,877
58 3,862,878
159 3,862,879
160 3,862,880
162 3,862,881
170 3,862,882
215 3,862,883

CLASS 164
63 3,862,656
86 3,862,657
87 3,862,658
250 3,862,659
349 3,862,660

CLASS 165
166 3,862,661

CLASS 166
248 3,862,662
276 3,862,663

CLASS 173
150 3,862,664

CLASS 174
53 3,863,021
58 3,863,037

CLASS 175
5 Re.28,322
383 3,862,665

CLASS 176
78 3,862,884

CLASS 177
50 3,862,666

CLASS 178
6 3,863,023
68 3,863,024
69.5R 3,863,025

CLASS 179
1GQ 3,863,028
1SH 3,863,026
1D 3,863,027
6E 3,863,029
15BM 3,863,031
15BY 3,863,030
17A 3,863,036
18ET 3,863,032
3,863,034
18FC 3,863,033
3,863,035

CLASS 180
6.48 3,862,668
22 Re.28,324
43R 3,862,667
91 3,862,669

CLASS 182
89 3,862,670
132 3,862,671

CLASS 184
6.12 3,862,672

CLASS 188
1C 3,862,673
73.3 3,862,674
170 3,863,038
181R 3,862,675

CLASS 192
.032 3,862,676
48.4 3,862,677
88A 3,862,678

CLASS 195
103.5R 3,862,885
127 3,862,886

CLASS 197
181 3,862,679

CLASS 198
30 3,862,680
50 3,862,681
229 3,862,682

CLASS 200
8A 3,863,039
67DB 3,863,040
144AP 3,863,041
153R 3,863,043
153T 3,863,042
175 3,863,044

CLASS 201
2.5 3,862,887

CLASS 202
263 3,862,888
3,862,889

CLASS 203
71 3,862,890

CLASS 204
27 3,862,891
58 3,862,892
180R 3,862,893
181 3,862,894
195R 3,862,895
198 3,862,896

CLASS 206
207 3,862,683
277 3,862,684
344 3,862,685
349 3,862,686
527 3,862,687

CLASS 208
73 3,862,898
93 3,862,899
262 3,862,900

CLASS 209
139R 3,862,688

CLASS 210
28 3,862,901
44 Re.28,323
58 Re.28,325
122 3,862,902
232 3,862,903
242 3,862,904

CLASS 211
126 3,862,689
165 3,862,690
176 3,862,691

CLASS 214
6B 3,862,692
17C 3,862,693
152 3,862,694
374 3,862,695
454 3,862,696
763 3,862,697

CLASS 215
1C 3,862,698
216 3,862,699
317 3,862,614

CLASS 219
10.55 3,863,045
132 3,863,046
265 3,863,047
383 3,863,048
389 3,863,049

CLASS 220
15 3,862,700
227 3,862,701

CLASS 221
1 3,862,702
63 3,862,703
242 3,862,704

CLASS 222
94 3,862,705
105 3,862,706
193 3,862,707
444 3,862,708

CLASS 224
5P 3,862,709

CLASS 225
103 3,862,710

CLASS 226
184 3,862,711

CLASS 227
127 3,862,712

CLASS 229

33 3,862,713
55 Re.28,317
Re.28,318

CLASS 233

3 3,862,714
15 3,862,715

CLASS 235

61.12R 3,863,051
61.7B 3,862,716
3,863,050
91R 3,863,052
150.2 3,863,053
150.21 3,863,054
150.22 3,862,717
150.27 3,863,055
151.3 3,863,056
152 3,863,057
3,863,058
153B 3,863,059
156 3,863,060
175 3,863,061

CLASS 236

49 3,862,718

CLASS 240

6.4K 3,863,062

CLASS 241

74 3,862,719
100.5 3,862,720
236 3,862,721

CLASS 242

35.5R 3,862,722
45 3,862,723
75.43 3,862,724
84.1J 3,862,725
107.4 3,862,726
3,862,727
158R 3,862,728
206 3,862,729

CLASS 244

83D 3,862,730
141 3,862,731
165 3,862,732

CLASS 248

48 3,862,733
125 3,862,734
405 3,862,735

CLASS 249

65 3,862,736
196 3,862,737

CLASS 250

199 3,863,063
3,863,064
211J 3,863,065
214R 3,863,066
231R 3,863,067
287 3,863,068
305 3,863,069
339 3,863,070
3,863,071
370 3,863,072
402 3,863,073
542 3,863,074
552 3,863,075
574 3,863,076

CLASS 251

43 3,862,738
130 3,862,739
305 3,862,740
353 3,862,741

CLASS 252

98 3,862,905
117 3,862,906
188 3,862,907
301.1 3,862,908
421 3,862,909
422 3,862,962
428 3,862,963
435 3,862,910
437 3,862,964
470 3,862,911
555 3,862,965

CLASS 254

78 3,862,742
100 3,862,743
148 3,862,744

CLASS 259

1R 3,862,745
4 3,862,746
10 3,862,747
122 3,862,748

CLASS 260

2.5F 3,862,912
17R 3,862,913
185 3,862,919
29.2EP 3,862,914
29.6HN 3,862,915
29.6ME 3,862,916
33.6A 3,862,917
37N 3,862,918
42.52 3,862,920
77.5AA 3,862,921
79 3,862,922
79.5C 3,862,923
88.1PA 3,862,924
112.5 3,862,925
3,862,926
3,862,927
3,862,928
156 3,862,929
210.5 3,862,931
239.1 3,862,932
3,862,933
239.3P 3,862,934
243C 3,862,941
246B 3,862,935
3,862,936
247.5D 3,862,938
247.5G 3,862,937
248CS 3,862,942
248NS 3,862,939
3,862,940
250A 3,862,943
256.4C 3,862,948
256.5R 3,862,944
3,862,949
268PC 3,862,950
286R 3,862,945
289R 3,862,951
293.76 3,862,946
295R 3,862,952
295T 3,862,953
295.5R 3,862,947
296R 3,862,954
304 3,862,955
308R 3,862,956
3,862,957
310C 3,862,958
340.9 3,862,959
346.4 3,862,960
347.3 3,862,966
348.5L 3,862,961
377 3,862,967
403 3,862,968
408 3,862,969
3,862,970
3,862,971
413 3,862,972
453AB 3,862,973
455R 3,862,974
3,862,975
465D 3,862,976
465E 3,862,977
465.7 3,862,978
473R 3,862,980
479S 3,862,981
482C 3,862,982
513R 3,862,983
514D 3,862,979
3,862,984
561A 3,862,985
570.5CA 3,862,986
570.6 3,862,987
593R 3,862,988
606.5P 3,862,989
607A 3,862,990
608 3,862,991
633 3,862,992
642C 3,862,993
3,862,994
653.6 3,862,995
677XA 3,862,996
680E 3,862,997
873 3,862,998
956 3,862,999

CLASS 264

45.5 3,863,000
148 3,863,001
216 3,862,897

CLASS 266

42 3,862,750

CLASS 267

91 3,862,751

CLASS 271

171 3,862,753
210 3,862,752

CLASS 272

66 3,862,754
3,862,755

CLASS 273

25 3,862,756
58C 3,862,757
95R 3,862,758
167A 3,862,759
176E 3,862,760

CLASS 274

1A 3,862,761

CLASS 277

92 3,862,762

CLASS 280

11.28 3,862,763
11.37E 3,862,764
11.37H 3,862,765
16 3,862,766
150AB 3,862,767
205 3,862,768
400 3,862,769

CLASS 285

30 3,862,770
54 3,862,771

CLASS 290

38 3,863,077

CLASS 292

36 3,862,772
70 3,862,773
228 3,862,774
327 3,862,775

CLASS 294

104 3,862,776

CLASS 296

91 3,862,777

CLASS 301

10DC 3,862,778
63DD 3,862,779

CLASS 302

36 3,862,780

CLASS 303

22R 3,862,781
40 3,862,782

CLASS 307

41 3,863,079
88P 3,863,078
235R 3,863,080

CLASS 308

196 3,862,783

CLASS 310

4 3,863,081
27 3,863,082
52 3,863,083
126 3,863,084
242 3,863,085

CLASS 312

140 3,862,784
194 3,862,789
223 3,862,785
228 3,862,786
285 3,862,787
294 3,862,788

CLASS 313

188 3,863,087
198 3,863,088
201 3,863,089
217 3,863,090
408 3,863,086
452 3,863,091

CLASS 315

1 3,863,096
3.6 3,863,092
10 3,863,097
12 3,863,093
3,863,094
14 3,863,095
39.3 3,863,100
82 3,863,101
105 3,863,102
111.2 3,863,103
154 3,863,104
245 3,863,105
336 3,863,107
367 3,863,098
383 3,863,099
388 3,863,106

CLASS 317

2R 3,863,108
13A 3,863,110
14R 3,863,109
61.5 3,863,111
96 3,863,112
101DH 3,863,113
123 3,863,114
124 3,863,115
230 3,863,116

CLASS 318

7 3,863,117
82 3,863,119
166 3,863,120
227 3,863,121
3,863,122
440 3,863,123
638 3,863,124
685 3,863,118

CLASS 320

1 3,863,126
15 3,863,127
21 3,863,128
31 3,863,129
44 3,863,130

CLASS 321

2 3,863,131
3,863,132
5 3,863,133
3,863,134
11 3,863,125
15 3,863,135
60 3,863,136

CLASS 322

25 3,863,137
28 3,863,138

CLASS 323

17 3,863,139
3,863,140

CLASS 324

.5R 3,863,144
37 3,863,141
43R 3,863,142
3,863,143
51 3,863,145
54 3,863,146
60CD 3,863,147
64 3,863,148
72.5 3,863,149
128 3,863,152
133 3,863,150
166 3,863,153
167 3,863,151
182 3,863,154

CLASS 325

67 3,863,155
346 3,863,156
365 3,863,157

CLASS 328

14 3,863,158
117 3,863,159
3,863,160
140 3,863,161
151 3,863,162
233 3,863,163
270 3,863,164

CLASS 330

2 3,863,165
4.3 3,863,166
4.6 3,863,167
18 3,863,168
22 3,863,169
23 3,863,170
30D 3,863,171
69 3,863,172
98 3,863,173

CLASS 331

2 3,863,174
67 3,863,175
94.5F 3,863,177
94.5G 3,863,178
94.5P 3,863,176
108D 3,863,179
117R 3,863,180

CLASS 333

96 3,863,181

CLASS 335

207 3,863,182

CLASS 336

96 3,863,183
110 3,863,184

CLASS 337

44 3,863,185
99 3,863,186
162 3,863,187
164 3,863,188
213 3,863,189
214 3,863,190
244 3,863,191

CLASS 338

2 3,863,192
20 3,863,193
164 3,863,194
183 3,863,195

CLASS 339

17LM 3,862,790
93C 3,862,792
198R 3,862,791

CLASS 340

1R 3,863,196
3,863,197
3D 3,863,198
3R 3,863,199
15.5GC 3,863,200
3,863,201
17 3,863,202
18LD 3,863,203
27P 3,863,204
32 3,863,205
38L 3,863,206
41R 3,863,207
52E 3,863,209
52H 3,863,208
59 3,863,210
60 3,863,211
64 3,863,212
74 3,863,213
131 3,863,214
146.1BA 3,863,215
146.1C 3,863,217
146.1R 3,863,216
146.3AE 3,863,218
146.3C 3,863,219
147LP 3,863,220
166 3,863,221
171PF 3,863,222
172.5 3,863,223
3,863,224
3,863,225
3,863,226
3,863,227
3,863,228
173AM 3,863,232
173FF 3,863,229
173SP 3,863,231
173R 3,863,230
174PW 3,863,233
174TF 3,863,234
195 3,863,235
255 3,863,238
258C 3,863,240
258R 3,863,239
259 3,863,241
273 3,863,242
274 Re.28,321
3,863,250
279 3,863,243
280 3,863,244
286 3,863,245
324R 3,863,246
326 3,863,236
336 3,863,247
347DD 3,863,248
373 3,863,249
382 3,863,251

CLASS 343

5R 3,863,252
9 3,863,253
18B 3,863,254
106R 3,863,255
112D 3,863,257
112R 3,863,256
113R 3,863,258
3,863,259

CLASS 346

1 3,863,260
74ES 3,863,261

CLASS 350

90 3,862,793
150 3,862,795
214 3,862,794
216 3,862,796
255 3,862,797
278 3,862,798

CLASS 353

88 3,862,799
113 3,862,800

CLASS 354

5 3,863,262
24 3,863,263

CLASS 355

15 3,862,801
23 3,862,802

CLASS 356

93 3,862,804
106LR 3,862,803
244 3,862,805

CLASS 358

8 3,863,022
11 3,863,264

CLASS 360

48 3,863,265
86 3,863,266
93 3,863,267
121 3,863,268
128 3,863,269

CLASS 401

118 3,862,806

CLASS 403

135 3,862,807
318 3,862,808
407 3,862,809

CLASS 404

66 3,862,810

CLASS 416

20 3,862,811
141 3,862,812

CLASS 418

61B 3,862,813
102 3,862,814

CLASS 423

20 3,863,002
232 3,863,003

CLASS 424

1 3,863,004
45 3,863,005
49 3,863,006
60 3,863,007
177 3,863,008
227 3,863,009
244 3,863,010
267 3,863,011
272 3,863,012

CLASS 425

116 3,862,815
292 3,862,816
3,862,817
308 3,862,818

CLASS 426

65 3,863,013
106 3,863,014
276 3,863,015
3,863,016
376 3,863,017
388 3,863,018
511 3,863,019
513 3,863,020

CLASS 431

4 3,862,819
66 3,862,820
168 3,862,821

CLASS 444

1 3,863,270

D 4—	35	234,168		197	234,179	D10—	6	234,190		62	234,201		15EE	234,213	D61—	1Q	234,223
D 6—	24	234,169	D 7—	23	234,180		109	234,191		71	234,202		HH	234,212	D64—	12B	234,224
	71	234,171		70	234,181		123	234,192		162	234,203		PP	234,214	D74—	17	234,225
	85	234,172		105	234,182		124	234,193	D32—	1R	234,204	D42—	7R	234,215		24	234,226
	88	234,175		184	234,183	D12—	169	234,194	D34—	4	234,205	D47—	5	234,216	D83—	1H	234,227
	89	234,170	D 8—	179	234,184	D22—	27	234,195		5CB	234,210	D48—	2	234,217		12A	234,228
		234,173		246	234,185			234,196		GH	234,206		20B	234,221		R	234,229
	97	234,174		248	234,186	D23—	4	234,197			234,207		K	234,218	D94—	3A	234,230
	139	234,176	D 9—	12	234,187		19	234,200			234,208			234,219	D96—	12R	234,231
	154	234,177		222	234,188		36	234,198			234,209			234,220		13	234,232
	164	234,178		242	234,189		58	234,199		PC	234,211		24R	234,222			

CLASSIFICATION OF PLANTS

P. —	17	3,677	P. —	55	3,676

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama..... 1
Alaska..... 2
American Samoa..... 3
Arizona..... 4
Arkansas..... 5
California..... 6
Canal Zone..... 7
Colorado..... 8
Connecticut..... 9
Delaware..... 10
District of Columbia..... 11
Florida..... 12
Georgia..... 13
Guam..... 14
Hawaii..... 15
Idaho..... 16
Illinois..... 17
Indiana..... 18
Iowa..... 19
Kansas..... 20
Kentucky..... 21
Louisiana..... 22
Maine..... 23
Maryland..... 24
Massachusetts..... 25
Michigan..... 26
Minnesota..... 27
Mississippi..... 28
Missouri..... 29
Montana..... 30
Nebraska..... 31
Nevada..... 32
New Hampshire..... 33
New Jersey..... 34
New Mexico..... 35
New York..... 36
North Carolina..... 37
North Dakota..... 38
Ohio..... 39
Oklahoma..... 40
Oregon..... 41
Pennsylvania..... 42
Puerto Rico..... 43
Rhode Island..... 44
South Carolina..... 45
South Dakota..... 46
Tennessee..... 47
Texas..... 48
Utah..... 49
Vermont..... 50
Virginia..... 51
Virgin Islands..... 52
Washington..... 53
West Virginia..... 54
Wisconsin..... 55
Wyoming..... 56
U.S. Air Force..... 57
U.S. Army..... 58
U.S. Navy..... 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,862,580
3,863,020
3,863,031
3,863,236
2 : 3,862,502
4 : 3,862,632
3,862,752
3,862,904
3,863,048
3,863,214
5 : 3,862,696
6 : 3,862,468
3,862,477
3,862,487
3,862,489
3,862,499
3,862,508
3,862,517
3,862,526
3,862,528
3,862,530
3,862,535
3,862,541
3,862,543
3,862,545
3,862,602
3,862,622
3,862,624
3,862,626
3,862,627
3,862,635
3,862,646
3,862,692
3,862,693
3,862,694
3,862,699
3,862,705
3,862,726
3,862,731
3,862,757
3,862,761
3,862,766
3,862,787
3,862,850
3,862,852
3,862,866
3,862,875
3,862,910
3,862,951
3,862,969
3,862,970

3,862,999
3,863,027
3,863,032
3,863,034
3,863,039
3,863,040
3,863,060
3,863,082
3,863,093
3,863,094
3,863,115
3,863,140
3,863,163
3,863,175
3,863,176
3,863,185
3,863,192
3,863,197
3,863,230
3,863,235
3,863,242
3,863,250
3,863,251
8 : 3,862,456
3,862,509
3,862,568
3,862,777
3,862,813
3,862,860
3,862,861
3,862,876
3,863,128
9 : Re.28,325
3,862,564
3,862,595
3,862,644
3,862,730
3,862,741
3,862,747
3,862,793
3,862,803
3,862,815
3,862,883
3,862,886
3,862,933
3,862,991
3,862,992
3,863,005
3,863,049
3,863,070
3,863,073

3,863,098
3,863,103
3,863,158
3,863,178
3,863,182
3,863,262
10 : 3,862,472
3,862,799
12 : Re.28,317
Re.28,318
3,862,471
3,862,510
3,862,529
3,862,532
3,862,537
3,862,605
3,862,670
3,862,671
3,862,681
3,862,690
3,862,709
3,862,735
3,862,808
3,863,026
3,863,056
3,863,066
3,863,142
3,863,159
3,863,160
3,863,212
13 : 3,862,531
3,862,533
3,862,746
16 : 3,862,511
3,862,765
17 : 3,862,458
3,862,461
3,862,462
3,862,463
3,862,480
3,862,486
3,862,507
3,862,513
3,862,522
3,862,523
3,862,536
3,862,550
3,862,563
3,862,607
3,862,633
3,862,640

3,862,643
3,862,645
3,862,656
3,862,666
3,862,679
3,862,685
3,862,689
3,862,697
3,862,701
3,862,707
3,862,721
3,862,725
3,862,736
3,862,745
3,862,763
3,862,770
3,862,772
3,862,774
3,862,779
3,862,782
3,862,818
3,862,869
3,862,888
3,862,889
3,862,891
3,862,909
3,862,926
3,862,955
3,862,976
3,862,980
3,863,025
3,863,030
3,863,033
3,863,044
3,863,052
3,863,079
3,863,102
3,863,118
3,863,138
3,863,216
3,863,227
3,863,249
3,863,261
18 : 3,862,453
3,862,491
3,862,493
3,862,519
3,862,585
3,862,620
3,862,672
3,862,695

3,862,733
3,862,750
3,862,826
3,863,001
3,863,038
3,863,127
3,863,155
3,863,164
3,863,184
19 : 3,862,467
3,862,571
3,862,652
3,863,045
3,863,136
3,863,246
20 : 3,862,538
3,862,698
3,862,717
3,862,996
3,863,053
21 : 3,862,609
3,862,637
3,862,720
3,862,786
3,862,798
3,862,801
3,862,827
3,862,903
22 : 3,862,835
3,863,211
24 : 3,862,603
3,862,732
3,862,811
3,862,930
3,862,960
3,863,051
3,863,081
3,863,132
3,863,149
3,863,166
3,863,179
3,863,239
3,863,257
3,863,258
25 : 3,862,455
3,862,495
3,862,554
3,862,598
3,862,712
3,862,748
3,862,843

3,862,867
3,862,939
3,862,940
3,863,076
3,863,109
3,863,188
3,863,191
3,863,196
3,863,217
3,863,226
3,863,228
3,863,238
3,863,240
26 : 3,862,459
3,862,460
3,862,498
3,862,506
3,862,518
3,862,524
3,862,527
3,862,540
3,862,551
3,862,565
3,862,577
3,862,581
3,862,600
3,862,667
3,862,668
3,862,669
3,862,674
3,862,675
3,862,682
3,862,691
3,862,727
3,862,737
3,862,743
3,862,767
3,862,781
3,862,783
3,862,785
3,862,789
3,862,800
3,862,864
3,862,935
3,862,946
3,862,950
3,862,952
3,862,956
3,862,974
3,862,978
3,862,984

3,863,009
3,863,101
3,863,116
3,863,208
3,863,210
3,863,252
3,863,265
27 : 3,862,555
3,862,617
3,862,703
3,862,753
3,862,775
3,862,814
3,862,989
3,863,017
3,863,019
3,863,180
3,863,195
3,863,237
28 : 3,862,937
29 : 3,862,614
3,862,623
3,862,710
3,862,820
3,862,887
3,863,004
3,863,014
3,863,187
3,863,189
3,863,190
30 : 3,862,539
3,862,582
31 : 3,862,636
3,862,677
32 : Re.28,324
33 : 3,862,819
3,863,114
3,863,131
34 : Re.28,323
3,862,476
3,862,485
3,862,525
3,862,566
3,862,572
3,862,658
3,862,702
3,862,776
3,862,829
3,862,830

3,862,840
3,862,841
3,862,859
3,862,872
3,862,894
3,862,916
3,862,943
3,862,953
3,862,961
3,862,985
3,863,012
3,863,013
3,863,042
3,863,063
3,863,065
3,863,080
3,863,087
3,863,088
3,863,099
3,863,100
3,863,105
3,863,117
3,863,133
3,863,134
3,863,156
3,863,157
3,863,168
3,863,169
3,863,177
3,863,181
3,863,215
3,863,222
3,863,255
35 : 3,862,516
36 : 3,862,457
3,862,546
3,862,556
3,862,557
3,862,591
3,862,621
3,862,629
3,862,630
3,862,639
3,862,641
3,862,642
3,862,654
3,862,655
3,862,673
3,862,686

3,862,704
3,862,713
3,862,740
3,862,769
3,862,795
3,862,796
3,862,802
3,862,817
3,862,825
3,862,831
3,862,836
3,862,842
3,862,847
3,862,855
3,862,857
3,862,858
3,862,874
3,862,923
3,862,945
3,862,949
3,863,007
3,863,010
3,863,024
3,863,061
3,863,064
3,863,074
3,863,077
3,863,078
3,863,086
3,863,090
3,863,111
3,863,143
3,863,144
3,863,154
3,863,198
3,863,199
3,863,209
3,863,219
3,863,232
3,863,234
3,863,243
3,863,244
3,863,245
37 : 3,862,475
3,862,722
3,862,758
39 : 3,862,469
3,862,470
3,862,483

3,862,492
3,862,544
3,862,549
3,862,570
3,862,587
3,862,593
3,862,616
3,862,638
3,862,676
3,862,678
3,862,680
3,862,687
3,862,724
3,862,728
3,862,754
3,862,755
3,862,810
3,862,828
3,862,845
3,862,890
3,862,893
3,862,896
3,862,908
3,862,942
3,862,975
3,863,023
3,863,071
3,863,089
3,863,110
3,863,124
3,863,213
3,863,233
3,863,254
40 : 3,862,497
3,862,900
3,862,993
3,862,994
3,862,997
3,863,002
3,863,200
3,863,202
41 : 3,862,592
3,862,756
3,863,264
42 : Re.28,321
Re.28,322
3,862,451
3,862,482
3,862,484

3,862,488
3,862,504
3,862,575
3,862,599
3,862,606
3,862,708
3,862,749
3,862,773
3,862,792
3,862,812
3,862,823
3,862,833
3,862,844
3,862,846
3,862,914
3,862,924
3,862,925
3,862,932
3,862,948
3,863,003
3,863,008
3,863,011
3,863,028
3,863,041
3,863,112
3,863,172
3,863,194
3,863,270
43 : 3,862,534
44 : 3,862,853
3,862,882
3,863,006
45 : 3,862,520
3,862,610
3,862,760
47 : 3,862,715
3,862,759
3,862,865
3,862,877
3,862,988
48 : 3,862,503
3,862,653
3,862,662
3,862,664
3,862,665
3,862,718
3,862,751
3,862,768
3,862,778

3,862,851
3,862,856
3,862,868
3,862,879
3,862,898
3,862,899
3,862,927
3,863,057
3,863,058
3,863,113
3,863,147
3,863,161
3,863,203
3,863,256
3,863,259
49 : 3,862,762
50 : 3,863,229
51 : 3,862,466
3,862,663
3,862,809
3,862,884
3,862,936
3,862,938
3,862,982
3,863,035
3,863,135
3,863,173
3,863,204
3,863,224
53 : 3,862,608
3,862,742
3,862,764
3,863,021
3,863,037
3,863,206
55 : Re.28,319
3,862,634
3,862,651
3,862,806
3,862,895
3,863,029
3,863,043
3,863,050
3,863,083
3,863,120
3,863,121
3,863,122
3,863,145
3,863,186

DESIGN PATENTS

6 : 234,183
234,188
234,210
234,212
234,217
234,226
8 : 234,191
9 : 234,190
234,215
12 : 234,232

13 : 234,202
234,224
17 : 234,168
234,179
234,193
234,228
22 : 234,205
24 : 234,227
25 : 234,172
234,182

234,197
234,231
26 : 234,180
234,209
234,214
32 : 234,175
34 : 234,199
234,201
234,211
234,218

234,219
234,220
234,230
36 : 234,169
234,176
234,192
234,213
234,223
234,229
37 : 234,177

234,178
234,221
39 : 234,204
40 : 234,194
234,198
41 : 234,195
234,196
45 : 234,186
47 : 234,171
48 : 234,185

234,206
234,207
234,208
54 : 234,216
55 : 234,170
234,173
234,174
234,184
234,200
234,222

PLANT PATENTS

6 : 3,677

37 : 3,676

U. S. GOVERNMENT PRINTING OFFICE : O - 1975

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
C. Marshall Dann, *Commissioner*